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WATER WORKS MEN WILL SAVE THOUSANDS OF DOLLARS BY USING

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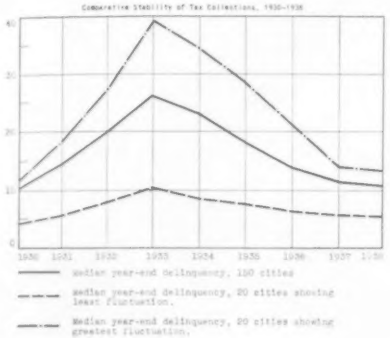
Trend of Tax Delinquency, 1930-1938

Fifth Consecutive Year of Improvement

TWO features stand out conspicuously in the municipal tax-collection record for 1938, according to a 1930-1938 survey of tax delinquency in cities of over 50,000 population, published last month by the Municipal Service Department of Dun & Bradstreet, Inc. Contrary to what might have been expected, in view of generally adverse business conditions, the average city collected a slightly higher percentage of its current property tax levy than it did in 1937, this marking the fifth consecutive year of improvement. The collection of delinquent taxes declined quite markedly, however, with the results that total collections of current and delinquent taxes fell below the year's levy, on the average, for the first time in four years.


Comparative Stability of Tax Collections, 1930-1938
1930 1931 1932 1933 1934 1935 1936 1937 1938
Median year-end delinquency, 150 cities
Median year-end delinquency, 20 cities showing least fluctuation.
Median year-end delinquency, 20 cities showing greatest fluctuation.

The average currrent tax delinquency for 150 large cities in 1938 was 10.7 per cent, compared with 11.3 per cent in 1937 and a peak delinquency of 26.3 per cent in 1933. Ninety-three of these 150 cities bettered their 1937 records, and only 30 lost ground as much as one percentage point.

Chiefly instrumental in producing these results, according to Frederick L. Bird, the author of the survey, were increased efficiency in tax-collection methods, removal of chronically delinquent property from the tax rolls through foreclosure, installment payment plans for taxes in arrears which necessitate prompt payment of current taxes, progress in the rehabilitation of real estate and, in a few instances, reduction in taxes levied.

Two paragraphs from Dr. Bird's comments follow:

"An ideal collection system provides for collections beginning early in the year, in order to avoid the uncertainties and expense of tax anticipation borrowing, and for practically complete collection by the close of the year. That the average city has not reached this stage of administrative efficiency is indicated by the year-end delinquency statistics. But that it is entirely feasible in an economically stable community is demonstrated by the results in a few municipalities.

"The last ten-year cycle of experience should serve to emphasize the need for budget-balancing devices which will allow for periodic fluctuations in the nation's economy without disrupting the financial operations of large numbers of cities. It is, of course, too much to expect that every city's revenue system can be made depression-proof by the introduction of some new administrative formula, but there is quite ample evidence that the shock can be minimized by the elimination of slipshod, hand-to-mouth methods of procedure."

RATIO OF TOTAL COLLECTIONS TO THE YEAR'S LEVY
1935-1938

City	Percent 1935	1936	1937	1938
Akron, Ohio	101.3	107.8	105.8	102.2
Allentown, Pa.	103.3	100.5	103.0	98.0
Altoona, Pa.	94.0	93.3	101.1	
Asheville, N.C.				112.6
Atlanta, Ga.	97.7	103.3	93.9	102.7
Atlantic City, N.J.	122.4	117.3	112.4	99.4
Augusta, Ga.	96.1	97.9	98.4	94.7
Austin, Texas	107.9	95.6	96.2	98.4
Baltimore, Md.	100.6	104.2	102.1	100.0
Bayonne, N.J.		96.5	93.3	92.4
Beaumont, Texas	111.9	91.5	108.7	102.2
Berkeley, Calif.	100.4	102.1	101.3	100.9
Bethlehem, Pa.	90.1	104.3	101.5	98.4
Binghamton, N.Y.	101.1	100.9	100.0	99.1
Birmingham, Ala.	103.5	100.9	100.2	98.0
Boston, Mass.	96.6	96.6	93.3	98.7
Bridgeport, Conn.	99.7	100.9	103.0	103.9
Brockton, Mass.	104.0	102.0	99.3	96.2
Buffalo, N.Y.	100.2	102.4	101.7	101.6
Cambridge, Mass.	101.4	102.2	97.0	106.4
Camden, N.J.				101.5
Canton, Ohio	111.7	115.1	128.6	
Cedar Rapids, Ia.	107.4	99.8	103.6	101.8
Charleston, S.C.	111.7	105.7	102.1	96.9
Charlotte, N.C.	102.2	105.1	100.7	100.4
Chattanooga, Tenn.	110.3	96.8	106.5	96.4
Chester, Pa.	101.8	109.8	107.1	107.3
Cincinnati, Ohio	101.8	100.1	99.3	98.2
Cleveland, Ohio	100.1	102.3	107.2	106.6
Cleveland Hgts., O.	118.1	110.8	114.5	108.9
Columbia, S.C.	92.1	105.1	95.1	
Columbus, Ohio	100.7	93.4	102.9	105.2
Covington, Ky.		92.4	103.2	
Dayton, Ohio	103.3	114.8	141.7	105.6
Dearborn, Mich.	100.2	106.4	100.4	102.1
Decatur, Ill.	102.5	96.8	101.1	99.8
Denver, Colo.	101.5	98.4	98.0	98.5
Des Moines, Ia.	98.1	99.4	99.4	100.0
Detroit, Mich.	99.2	111.4	124.4	111.8
Duluth, Minn.	85.8	93.7	96.5	92.5
Durham, N.C.	100.9	99.4		
East Chicago, Ind.	90.0	91.5	96.9	
East Orange, N.J.	96.9	114.3	106.3	100.2
East St.Louis, Ill.	74.6	82.1	79.7	80.3
Elizabeth, N.J.	98.3	105.6	103.8	93.9
El Paso, Texas		111.0	96.8	104.5
Erie, Pa.	107.6	105.5	123.2	108.7
Evansville, Ind.	99.4	98.5	98.8	102.1
Fall River, Mass.	103.6	96.6	102.6	
Flint, Mich.	94.9	111.6	116.0	115.6
Fort Wayne, Ind.	100.1	100.3	104.0	102.4
Fort Worth, Texas	111.8	101.4	92.9	94.5
Fresno, Calif.	98.4	99.6	104.7	103.0
Galveston, Texas	98.1	92.4	94.0	92.9
Gary, Ind.	100.3	102.5	108.5	
Glendale, Calif.	104.7	104.5	114.7	
Grand Rapids, Mich.	95.7	108.7	116.4	112.8
Hamilton, Ohio	95.5	111.5	107.8	
Hammond, Ind.		103.2	102.3	95.5
Hamtramck, Mich.	105.9	113.9	106.6	105.0
Harrisburg, Pa.	105.9	104.1	102.7	99.4
Hartford, Conn.	104.3	106.2	105.9	103.2
Highland Park, Mich.	100.4	113.0	116.0	
Hoboken, N.J.	86.4	87.0		
Holyoke, Mass.	112.6	104.3	97.7	
Houston, Texas	105.2	100.8	103.1	98.1
Huntington, W.Va.	102.4	114.2	97.7	
Indianapolis, Ind.	103.3	105.8	102.7	101.0
Irvington, N.J.	107.2	101.6	99.6	
Jackson, Mich.	85.3	125.9	107.8	119.7
Jacksonville, Fla.	98.1	111.3	104.2	96.2
Jersey City, N.J.	90.5	90.4		
Johnstown, Pa.	93.5	102.7	104.1	98.0
Kalamazoo, Mich.	106.2	105.4	105.6	100.0
Kansas City, Kan.	93.1	93.2	90.3	93.2
Kansas City, Mo.	90.7	88.8	86.6	
Knoxville, Tenn.		96.2	112.0	103.0
Lakewood, Ohio	106.1	102.5	106.7	106.5
Lancaster, Pa.	107.3	99.8	110.4	
Lawrence, Mass.	109.1	90.3	98.7	96.2
Lincoln, Neb.	99.2	95.2	101.2	103.4
Los Angeles, Calif.	100.2	103.6	108.0	106.8
Louisville, Ky.	100.9	98.6	97.5	96.3
Lowell, Mass.	93.9	90.6	101.0	90.7
Lynn, Mass.	107.2	99.3	105.8	112.7
Macon, Ga.	107.8	113.9	99.2	100.3
Malden, Mass.	101.8	101.0		99.4
Manchester, N.H.	96.6	96.1	104.4	
McKeesport, Pa.	113.6	113.4	110.5	100.3
Medford, Mass.	104.5	102.7		95.2
Memphis, Tenn.	96.6	103.6	109.1	96.7
Miami, Fla.	99.3	100.9	98.0	95.6
Milwaukee, Wis.	104.9	106.2	105.7	
Minneapolis, Minn.	91.7	101.3	103.5	100.1
Mount Vernon, N.Y.	102.7	104.6	99.5	100.4
Newark, N.J.	105.9	99.5		
New Britain, Conn.	107.2	109.3	108.3	104.6
New Haven, Conn.	101.6	102.5	102.0	100.8
New Orleans, La.			108.3	119.1	106.3[a]
New Rochelle, N.Y.	100.6	100.3	99.1	93.4
Newton, Mass.				95.8
New York, N.Y.	103.3	102.9	98.9	97.0
Norfolk, Va.	99.2	107.3	105.6	121.9
Oakland, Calif.		104.4	102.4	101.8
Pasadena, Calif.	103.9	107.9	107.3	105.5
Passaic, N.J.	99.7	110.0	109.7	102.5
Paterson, N.J.	102.4	96.6	99.7	98.0
Pawtucket, R.I.	112.5	100.2	100.3	
Philadelphia, Pa.	109.6	110.4	106.9	
Pittsburgh, Pa.	98.2	96.9	103.5	99.7
Port Arthur, Texas				93.8
Portland, Me.	101.5	103.5	102.3	100.0
Portland, Ore.	99.6	103.5	101.0	97.3
Providence, R.I.	97.9	96.6	99.4	
Pueblo, Colo.	94.0	94.9	102.9	97.6
Quincy, Mass.	100.4	105.5	96.8	
Racine, Wis.	106.4	121.6	120.1	114.6
Reading, Pa.	100.7	109.5	106.2	99.3
Roanoke, Va.	118.6	131.5	111.7	100.5
Rochester, N.Y.	101.0	100.8		95.3
Saginaw, Mich.	83.9	130.9	102.1	122.5
St. Joseph, Mo.	97.3	95.9	97.5	97.8
St. Paul, Minn.	93.8	96.5	102.2	98.6
Salt Lake City, Utah	109.9	106.6	106.7	102.7
San Antonio, Texas	108.4	92.2	99.6	87.7
San Francisco, Cal.	100.4	100.2	100.9	100.5
San Jose, Calif.	101.8	101.8		106.7
Savannah, Ga.	92.0	90.1	94.7	
Schenectady, N.Y.	100.9	99.7	99.3	98.7
Scranton, Pa.	103.4	97.5	91.4	
Seattle, Wash.	111.5	105.1	116.0	103.9
Shreveport, La.	98.9	98.1	94.1	
Sioux City, Ia.	106.5	102.7	101.0	101.7
Somerville, Mass.	100.6	97.8	96.8	99.0
South Bend, Ind.	112.7	100.0	111.7	
Spokane, Wash.	106.5	101.0	101.1	101.4
Springfield, Ill.	98.4	100.1	102.9	98.1
Springfield, Mass.	110.6	102.7	102.7	96.7
Springfield, Ohio	100.2	95.5	96.2	105.0
Tacoma, Wash.	103.5	97.5	102.1	
Tampa, Fla.	86.4	85.3	77.0	85.2
Terre Haute, Ind.	100.6	101.7	108.7	
Toledo, Ohio	112.5	119.1	115.6	
Topeka, Kan.	103.4	100.4	98.4	96.0
Trenton, N.J.	98.5	102.0	105.9	99.3
Troy, N.Y.	96.1	95.9	92.8	93.4
Union City, N.J.	98.8	103.6	109.7	117.3
Utica, N.Y.		102.0	101.8	98.5
Waterbury, Conn.	111.0	106.0	101.3	99.2
Wichita, Kan.	97.5	100.5	101.9	98.2
Wilkes-Barre, Pa.	104.1	101.9	91.4	
Wilmington, Del.	93.2	105.5	99.6	102.0
Worcester, Mass.	110.2	103.2	102.0	98.2
Yonkers, N.Y.	100.9	102.8	102.8	98.3
York, Pa.	105.7	102.5	104.3	100.5
Youngstown, Ohio	96.0	119.6	114.3	109.2

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FEW things give you so much convenience, happiness and security —all rolled into one—as your telephone.

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BELL TELEPHONE SYSTEM

YOU ARE CORDIALLY INVITED TO VISIT THE BELL SYSTEM EXHIBIT AT THE NEW YORK WORLD'S FAIR

During April we hope you will remember to mention THE AMERICAN CITY.

Our Municipal Notebook

That Permanent Marker

THE Armstrong Cork Co. is manufacturing for the Armor-Flex Co., of St. Louis, Mo., a permanent traffic marker which, it is claimed, has high visibility, resists abrasion, offer no resistance to snow-plows, is non-staining, resists heat and cold, and is reasonable in price.

A survey by THE AMERICAN CITY of traffic-marking practices in a number of large cities shows that no manufacturer of permanent markers can be too particular in their manufacture. A number of cities feel that because of the simplicity and certainty of paint, however short-lived, painted traffic lines contain the least grief.

Traffic Engineer Thomas R. Drake of Akron puts the case thus: "Paint has proved most satisfactory; there are no obstructions above crown of road, and a painted line has flexibility when conditions warrant change; permanent markers are hard to remove from the pavement and the holes must be filled."

There are, however, many places, such as the unalterable center line, where a marker could remain permanently to the great satisfaction of traffic engineers, street officials, motorists and pedestrians.

On the subject of permanent markers, Mr. Drake says: "I recently saw some Medusa cement brick-size markers which had been installed for three years and still retained a white surface."

"I believe there is going to be a more general use of permanent markers," says Traffic Engineer Wallace L. Braun of the Baltimore Police Department, and recommends for durability and visibility a disc made of 80 per cent brass and 20 per cent nickel. Spokane has installed some 20,000 bronze and aluminum alloy buttons and says: "Without question, marking of streets will become an important part of traffic regulation and traffic safety in years ahead. Our ideas are that some means will be found whereby white or other color concrete, or similar item, can be laid as marking when paving."

APPEARANCE OF CROSSWALK OF 3 x 6-INCH ARMOR-FLEX BLOCKS AFTER FIVE YEARS' WEAR IN UNIVERSITY CITY, MO.

Minneapolis and Toledo favor a white cement strip; Lynn, Mass., says the best marker is the one set in the street when built; Springfield, Mass., favors white cement for dark roads and black asphalt for concrete roads; Denver, Colo., believes reflectorized markers provide superior visibility.

The eight cities mentioned in the foregoing had 344 miles of streets marked in 1938, compared with 266 miles in 1936. This trend is confirmed by the respective 1938 and 1936 mileage figures for: Grand Rapids, 250 miles and 200 miles; Kansas City, 54 and 42; Los Angeles, 1,209 and 647; Louisville, 85 and 60; Portland, 60 and 15; Rochester, 63 and 54.

World's Fair Traffic

THE New York World's Fair is a 600-acre business district planned for 300 to 400 thousand visitors per day. Unlike any other business district, it did not just grow, but was planned in the beginning for its greatest attainment. Its layout, arrangement and facilities, therefore, are an invaluable lesson in wholesale city planning, the impossible dream of all city planners, the answer to "If only we could start afresh."

Knowing that this mushroom city of the future would rise *in toto* out of the Flushing dumps, what was done? It was seen at once that vehicles and pedestrians must be separated. Three-lane boulevards carry vehicles in the middle 24-foot lane with 12-foot planted strips on each side separating the vehicles from the 35-foot pedestrian lanes. An interior system of bus routes gives ready access to every part of the grounds. Where pedestrian density is greatest, tractor trains provide auxiliary transit, and wheelchairs add the magic touch of luxury, leisure, and enjoyment.

Accepting transportation as the lifeblood of this district, as many types of vehicles as possible come to the Fair or circulate rapidly throughout the grounds in all directions, on the agreeable principle that feet are to dance with, and not, as Dr. Philip S. Hench of the Mayo Clinic predicts for both New York and San Francisco, to have gout with.

In addition to the above, you will find on page 129 an expert discussion of the municipal aspects of the lighting of the New York World's Fair.

LAUNCHING THE FIRST X-RAY TRUCK

Nurses, Health Director Dr. John Peter Hoguet, Col. John P. Hogan, Vice-President and Chief Engineer, and President Grover A. Whalen, all of the World's Fair, inspecting the streamlined Mack equipped with Westinghouse portable X-ray apparatus for obtaining immediate accident evidence

FIRE PROTECTION AT THE NEW YORK FAIR

Two 1,000-gallon piston pumpers and three 500-gallon centrifugal pumpers of Ahrens-Fox make are an important part of equipment of the New York Fire Department, for protecting the World's Fair. The Fair mains carry 70 pounds pressure at the 181 hydrants spaced 300 feet apart

Steel Plates Protected by PHOSPHORIC PICKLING

Shown at the right is a new 1,500,000-gal. standpipe recently installed in the waterworks system at Akron, Ohio. This structure was fabricated entirely from the pickled plates. The view below shows the pickled plates being hoisted into position on the job, in preparation for welding.

Below: General view of the pickling plant. The fabricated plates are pickled in the vats at the right, painted and set up in racks in the foreground to dry.

THE phosphoric pickling process is a scientific method of removing mill scale from steel. This not only makes it possible to paint the steel immediately but improves the bond between the paint and metal.

When this process is employed, the steel is pickled after fabrication. The plates are placed first in a warm sulphuric acid solution which removes the mill scale, then washed and dipped into a phosphoric acid solution. Upon being removed from this last bath, all surfaces except the edges are given a coating of special paint while still warm. This assures the paint being applied to a thoroughly clean surface. Also the temperature of the metal speeds the drying process. After erection in the field, the final coats of paint are applied immediately.

In addition to being practical, the phosphoric pickling process is also economical, because the coating of iron phosphate and the improved bond makes the field paint last longer, reducing maintenance costs.

For the past 18 months we have been pickling fabricated material by the phosphoric method at our Greenville, Pa., plant. We will appreciate the opportunity of discussing the advantages of pickling tanks and steel plate work that can be shipped economically from Greenville.

CHICAGO BRIDGE & IRON COMPANY

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut St. Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Hunt Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Liberty Bank Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

The Importance of Water Supply

Water and Automobiles Seek Public Approval

THE solution of the public utility industry's problem of winning public approval for its products lies in guaranteeing a better quality of service at no increase in cost, through improved management, according to a statement of Lorenzo Semple, Assistant Vice-President of the American Water Works & Electric Co., at the twenty-third annual convention of the New Jersey Utilities Association.

"Our solution does not necessarily lie in lower prices for our products, for indeed it would be hard to imagine a time when such a change in our rate structure would be less justified," he said. "The dilemma we are facing as an industry lies largely in our profitless prosperity —our increasing volume of business at decreasing net profits.

"The public which has been prone at times to give the public utility industry scant approval is the same public which has named the automobile business America's Favorite Industry. And why? Not only because the automobile is still America's favorite recreation, but because as an industry it has continuously followed the policy of giving the public more for its money, and in a form appealing to its tastes.

"I submit that our industry's record of constantly lowering prices is second to none, yet the fact remains that we do not share the popularity of the automobile industry nor of others I could mention. Evidently, therefore, something more than lower prices is required. Perhaps the complaint is not so much with our pricing of our product as with our packaging of it. It is this very thing—a study of the public's tastes—to which the motor industry has successfully addressed itself.

"In a better quality of service lies the challenge, and I am convinced that improved management is the answer—just as it is in other industries. Let us, like them, give our people better tools to work with. Let us remodel our organization into a more skillfully machined mechanism.

"When I speak of organization, I have in mind its fundamental parts—its management, its supervisory organization, and its people on the firing line.

"By the very nature of things, a close personal relationship between contact employees and executive management is not possible, and it is here that the proper functioning of the supervisory group must be relied upon. It is this group that is charged with translating the policy of the management into action. It is they who control the welfare of the employees, who in turn control the costs of operation and influence public reaction.

"This group is the bottle neck, the crossroads of the two-way flow of information, and requires a close personal relationship with the management in order to translate properly the ever-changing policy of management. Its members must be consulted as to their opinions, and their advice sought and carefully analyzed. The answers for many difficulties can be produced by the very people experiencing the difficulties, but to be usable and practical they must be collected and correlated and new methods set up for execution.

"In this way management can give the supervisory group better tools to work with, consisting of a clearer understanding of policy regarding legitimate economy, proper labor discipline, and proper earnings.

"If I am right in surmising that what is needed to gain for our industry its rightful place in the sun of public opinion—the opinion of our customers, our employees and our investors—is better service at lower cost, I have no hesitation in recommending to you a better use of that priceless tool — organization technique. What I have suggested costs nothing in money but much in time and intelligence, and in the energy to motivate a more delicate and finely machined mechanism steadily along a difficult course, a course more acceptable and popular with our customers."

Water Consumption in the British Isles

DURING the past forty years the consumption of water throughout Great Britain has heavily increased. This is partly due to an increase in the population, partly to the increased consumption of water for domestic purposes, and partly to the increased demand for industrial purposes, according to John Bowman, City Water Engineer, Edinburgh, in an article, "Consumption of Water," in the October, 1938, issue of *Water and Water Engineering*, London, England, pages 88-100.

As in the United States, this increasing demand has caused many new problems, particularly for small communities which do not have the financial structure to incur large expenditures for new supplies. Mr. Bowman states that forty years ago few houses had an adequate water supply. More than one-half the population had but one tap in each house. Many had no water-closets, no baths, and no hot-water systems. With the housing policy now being steadily pursued, the provision of all houses fitted with hot and cold water, sink and bathtub, bath and water-closet, the need for more water is likely to increase for many years. He states further that each succeeding generation is becoming more lavish in the use of water, and the needs of the householder of forty years ago are not the standard of the householder of today.

In this excellent discussion the author shows the variation of consumption in different towns in England, Scotland and Ireland, taken from the "Water Engineers Directory for 1938."

	Population (Thousands)	U. S. Gallons Per Capita Daily
England		
Bradford	414	66
Plymouth	222	58
York	111	50
Manchester	1,250	47
Liverpool	1,092	42
Leeds	534	41
Oxford	108	38
Birmingham	1,102	37
Southampton	307	36
Rochdale	136	34
Wakefield	160	30
Scotland		
Greenock	81	216
West Lothian	41	88
St. Andrews	10	79
Dundee	204	65
Edinburgh	513	64
Glasgow	1,257	46
Ireland		
Limerick	40	60
Cork	105	54
Belfast	454	52
Dublin	561	43

New Steel Storage Tank for Hollywood, Fla.

HOLLYWOOD, Fla., has recently completed the construction of a new 1,000,000-gallon flat-bottom tank to increase the capacity for the storage of water for the domestic water supply. The tank is of welded construction, 85 feet in diameter and 24 feet high. It is shown at the right in the illustration.

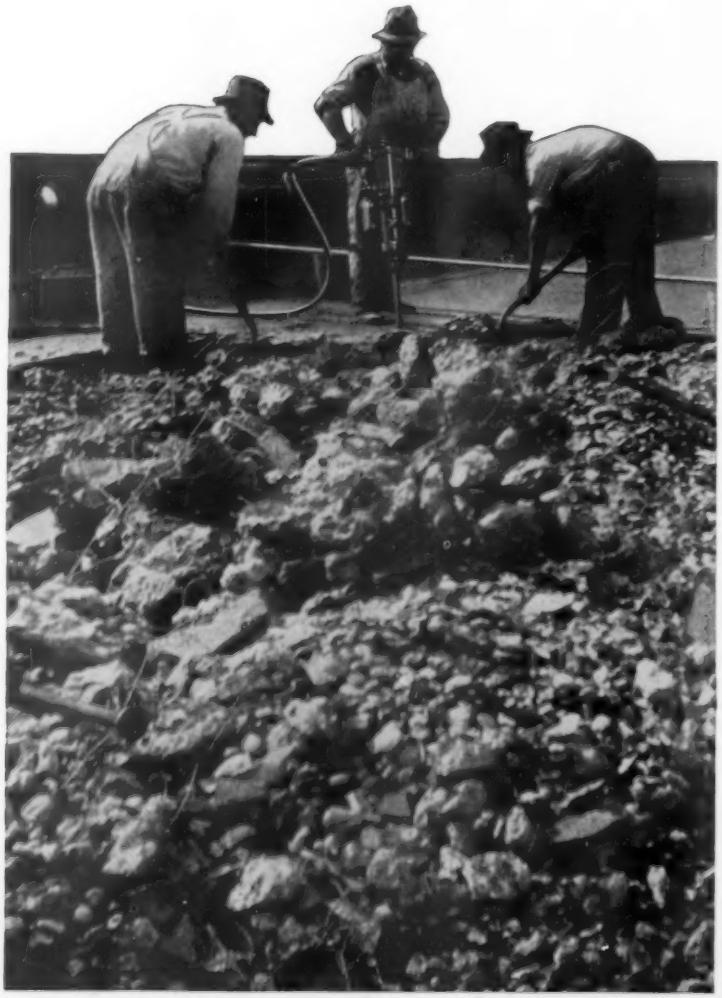
The tank is located at the pumping station, which is at the end of the city farthest from the ocean. Some months ago a 200,000-gallon ellipsoidal bottom and top elevated tank was erected at Hollywood near the ocean to equalize the pressure on the distribution system.

THE NEW 1,000,000-GALLON WELDED FLAT-BOTTOM TANK ADDED TO THE WATER SYSTEM AT HOLLYWOOD, FLA., ERECTED BY CHICAGO BRIDGE AND IRON CO.

BATTER OUT PROFITS

On Spring and Summer Construction and Repair Jobs with a

BARCO



● With spring construction and repair work soon opening up, you will probably have a variety of hammer jobs to provide ample opportunity for a BARCO to quickly pay for itself.

When you are ready . . . whether it be breaking, driving, drilling, cutting or tamping . . . we hope we may have the opportunity of demonstrating "on the job."

Depend on a BARCO to put you through on time, and economically.

BARCO MANUFACTURING COMPANY
1803 W. Winnemac Ave., Chicago, Ill.

BARCO *Portable* GASOLINE HAMMER

City Street Paving

ALLIS-CHALMERS SPEED PATROL POWER GRADER WITH LEANING FRONT WHEELS, USED BY THE CITY OF PALESTINE, TEXAS, POPULATION 11,445, FOR MAINTAINING ABOUT 100 MILES OF STREETS

Paving in Miami

THE Street Section of the Division of Streets, Bridges and Sewers of Miami, Fla., is charged specifically with the maintenance of all streets, sidewalks, curbs, gutters, driveways and alleys. The street mileage in Miami is approximately as follows:

Asphaltic types	108.78	miles
Concrete	14.02	"
Oil macadam	413.26	"
White rock, all conditions	101.65	"
Unsurfaced but used	71.29	"
Total	709.00	miles

During the fiscal year ended June 30, 1938, in addition to the regular maintenance of city streets, the Division repaved 91,815 square feet of utility ditches, rebuilt 23,429 square feet of broken sidewalks, built 1,120 square feet of new sidewalks, rebuilt 746 feet of broken curb, and 571 feet of broken gutter, and rebuilt 1,855 square feet of broken driveways.

The oiled macadam streets were patrolled and patched about eight times during the fiscal year, the crews covering in the performance of this work a total of 3,406 miles. A total of 5,740 linear feet of worn-out oiled streets were re-oiled, and 46,732 linear feet of street-shoulder improvements were made by valley ditching or fill as required. A total of 106,470 square yards of worn-out white rock and old oiled streets were rebuilt and oiled. This is the equivalent of about 12 miles of street 15 feet wide.

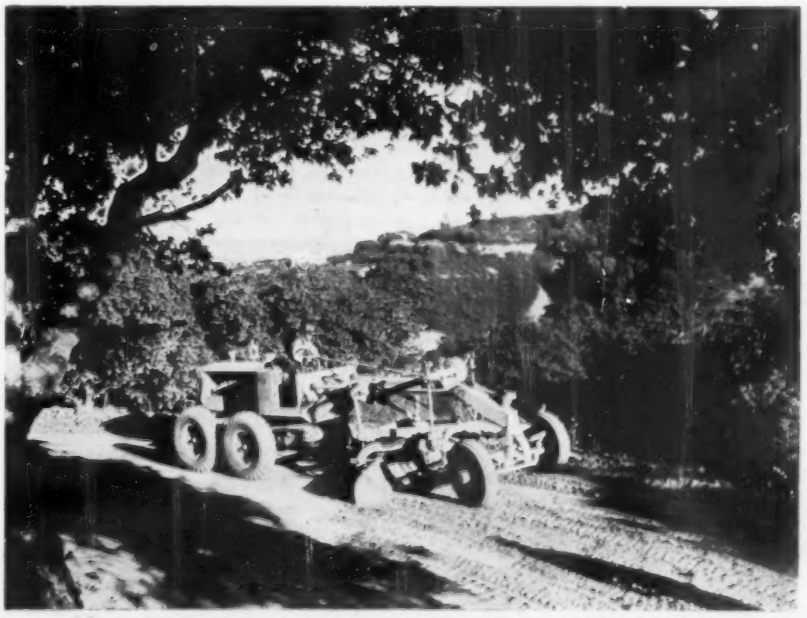
Vibrated Monolithic Brick Pavement

ON U. S. Route No. 21, the Cleveland-Massillon Road, northwest of Massillon, Stark County, Ohio, the Elmer O. Vogt Paving Co. has completed 2.194 miles of 20-foot width vibrated monolithic brick pavement. The design consists of a 3-inch monolithic brick surface course without cushion on a 9-7-7-9-inch reinforced concrete base course. There is a 1-inch expansion joint at 60-foot intervals with a longitudinal center joint. The transverse expansion joint is of the assembled metal type with dowels and bituminous premolded filler with a cork extension in the brick surface. This joint is continuous from the bottom of the base to the top of the surface. The longitudinal center joint consists of premolded material which extends 2½ inches into the concrete base and has a total depth of 5½ inches.

This project differs both in design and in method of construction from the old type of monolithic brick pavement constructed a number of years ago. There is proper provision for expansion and the elimination of haphazard longitudinal cracking. The most striking feature, however, is the fact that the methods of construction are mechanized to a large extent. The concrete base is vibrated with the usual concrete pavement vibrating machine, and the longitudinal center joint in the base is impressed with Heltzel joint equipment as in concrete highway construction, with the exception that the premolded material is left 3 inches above the top of the concrete to accommodate the brick surface.

After the brick are laid directly on the green concrete base, they are vibrated into place with a motorized self-propelling machine that travels on the steel side forms. The vibration at the rate of 3,000 blows per minute is transmitted to the brick surface through longitudinal metal slats 5 feet in length. This apparatus, which was used for the first time on this job, was operated without delay or breakdown. A surface well within the specification requirements for smoothness has been obtained. The grout filler is discharged on the surface of the pavement direct from a small mixer.

INFORMATION, PLEASE!
Be sure to read the answers of the experts to the Paving Problem in the 1939 *Municipal Index*, to be published in May.



REBUILDING STEEP WINDING STREETS WITH AN AUTO PATROL IN HILLSBOROUGH, CALIF.

The power grader finishes the subgrade, widens the shoulders and spreads material dumped by scrapers, working 8 hours a day on 15 gallons of fuel

ANNOUNCING THE

Three-Fold FIRE ALARM BOX

1939 MODEL

Write for descriptive bulletin.

CONSISTENT with its policy of continuous improvement maintained since the inception of the Fire Alarm Industry, The Gamewell Company offers in the new Three-Fold Box, 1939 model, increased margins of safety against loss of alarms, greater durability and improved functional characteristics.

New Features of the 1939 Model Include—

Stainless steel for all steel parts except magnet parts.
Silver plating on all parts used as electrical connections.
Chromium and nickel finish on all bronze and brass parts—No lacquer used.
Extended successive function.
Automatic indication at central of run-down or broken main spring.
Run-down main spring cannot leave circuit open.
Other improvements tending to simplify the mechanism and improve structural details.

The new model supersedes all previous designs of Three-Fold Fire Alarm Boxes.

THE GAMEWELL COMPANY

NEWTON UPPER FALLS MASSACHUSETTS

Public Safety

Teach Old People To Be Careful

QUINCY had eight fatalities in 1938, as compared with seven fatalities in 1937. Of the eight, six were pedestrians and two were occupants of motor vehicles. This was a decrease of two occupants over 1937, but an increase of three pedestrians.

An analysis of the pedestrian accidents shows that two of the victims were 6½ and 12 years of age respectively; the remaining four victims were between the ages of 68 and 76 years. These pedestrian accidents in each instance were the result of carelessness on the part of the pedestrian, and in no way could enforcement have prevented them. The two children killed had received lessons on safety education in school. The elderly pedestrians had never received any safety instruction, and their deaths pointedly illustrate the difficulty of educating elderly people. In other words, enforcement in this city is cutting down accidents due to carelessness and overspeeding on the part of the operator.

We must try in Quincy, and elsewhere, to control the actions of elderly people on the streets at night and in stormy weather. This is educational work and cannot be taken on to any great degree by the police, although we do try to educate adults by safety talks at clubs, socials and church meetings. The old saying, "It is hard to teach an old dog new tricks" is applicable to adult pedestrians whether they live in Quincy or in any other city.

JOHN J. AVERY,
Chief of Police, Quincy, Mass.

Gathering Facts on Metered Parking

WE propose to make a four months' trial installation of 463 Mi-Co parking meters in four sections of the city of Pittsburgh: Downtown, North Side, Oakland, and East Liberty.

We are making a study of traffic conditions on certain streets prior to the installation of the meters, to be supplemented by a similar study after their installation. Parking checks have been made on various days of the week, and we are arranging to make vehicle speed checks in the near future, probably including street-car and bus speed checks on the streets affected, prior to and after the installation of the meters.

DONALD M. MCNEIL,
Traffic Engineer, Bureau of Traffic Planning, Pittsburgh, Pa.

Has your city a sufficient number of fire-alarm boxes?

Safe Speed Signs Mark Ohio Curves

SAFE-SPEED reflectorized signs at all curves on State Route U. S. 40 in Ohio have been ordered by Highway Director John Jaster, Jr. Although these are speed-suggestion and not speed-limit signs, their observance should insure a much greater degree of safety to the motoring public. Says Traffic Engineer Harry E. Neal: "Curves are one of the greatest single hazards of our highways, but the standard curve signs give no indication as to the rate of speed at which the curve may be negotiated safely. These safe-speed signs will be mounted below the curve-warning signs on the same posts."

Meters Cut Accident Rate in Atlantic City

ATLANTIC, CITY, N. J., started the use of parking meters for the control of traffic on August 2, 1937. We now have 590 Miller meters operating on a basis of 12 minutes for 1 cent and 90 minutes for 5 cents (on the same meter), and 605 Dual meters operating on a basis of 90 minutes for 5 cents.

These meters, with the appropriate enforcement, have entirely eliminated double parking and the all-day parking, have cut down our accident rate about 40 per cent, and have made it possible for motorists to use their automobiles for shopping and business purposes—not possible before the installation of meters.

F. A. BROADHEAD,
Chief Inspector, Bureau of Traffic Inspection, Atlantic City, N. J.

7,000,000 Pedestrians on Bicycles

MIXING 7 million bicycles with 28 million automobiles is resulting in the deaths of some 800 bicycle riders per year. Timely are the ten rules of safe bicycle riding included in a study of the entire subject by Lieut. Richard O. Bennett, of the Lincoln, Nebr., Police Department, published by the Northwestern University Traffic Institute, Evanston, Ill.

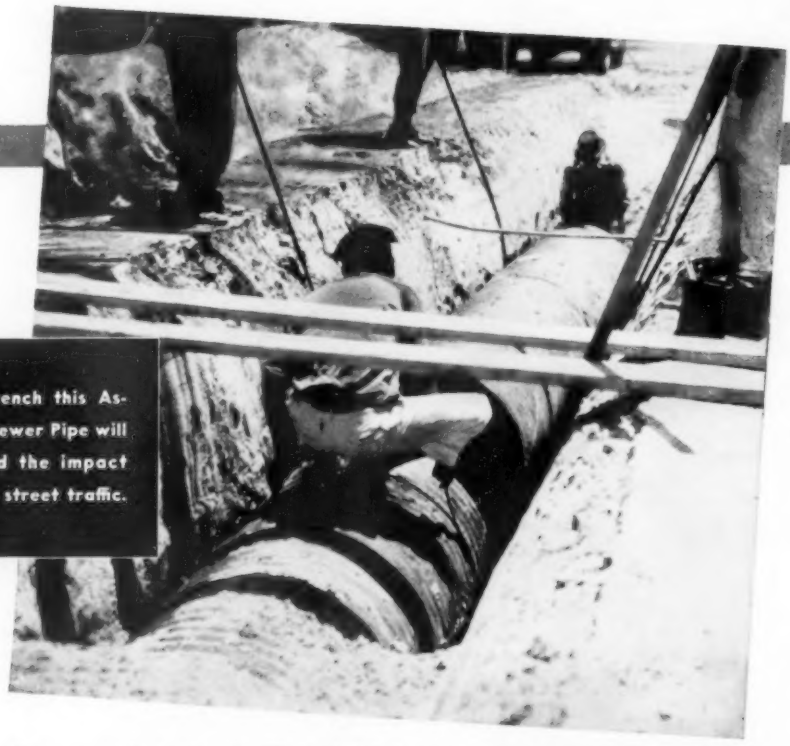
1. Do not ride a bicycle with another person on it, unless it is a tandem bicycle with two or more seats.
2. Stop at all stop signs.
3. Ride only on the right side of the street.
4. Do not cling to any other vehicle.
5. Do not ride at night without a light on the front and a reflector or lamp on the rear of your bicycle.
6. Do not ride abreast of another bicycle rider.
7. Do not ride out of alleys and driveways, or from behind parked cars, without stopping and looking to see that the sidewalks or streets are clear of traffic.
8. Obey traffic signals and the orders of traffic officers and school patrols.
9. Do not engage in any trick riding or weaving in traffic.
10. Become familiar with, and obey, all traffic rules and regulations; be watchful and alert at all times, and safety-minded.

This study, entitled "The Bicycle and Traffic Safety" (20 cents per copy), analyzes bicycle ordinances and offers a model ordinance, operator examinations, safety equipment requirements, and penalties for violations.

"Two-way radio is distinctly advantageous as compared with the one-way system. In the one-way system a message is transmitted to the cars, but there is no means of knowing whether or not it has been received. The operator is in the dark as to what has taken place after his message has gone out over the ether."—Director of Public Safety Daniel Casey of Jersey City, N. J., in THE AMERICAN CITY of March, 1938

You Dig Only Once

FOR ARMCO SEWER PIPE



Placed in a shallow trench this Asbestos-Bonded Armco Sewer Pipe will successfully withstand the impact and vibration of heavy street traffic.

No need to replace broken sections; repair leaky inefficient joints; or remove troublesome tree roots, not when you use Armco Sewer Pipe.

• Years ago when things went "wrong" with sewers, they were taken for granted. But today many engineers feel different; because they realize that the cost of maintenance and sewage treatment can be greatly reduced by using Armco Sewer Pipe.

Here, truly, is one sewer pipe you can install and forget. Neither heavy loads, traffic impact nor splitting frost action will harm it. Then too, thanks to its flexible corrugated iron design and tightly coupled joints, Armco Sewer Pipe holds its grade and alignment in the most unstable soil without admitting tree roots or ground water.

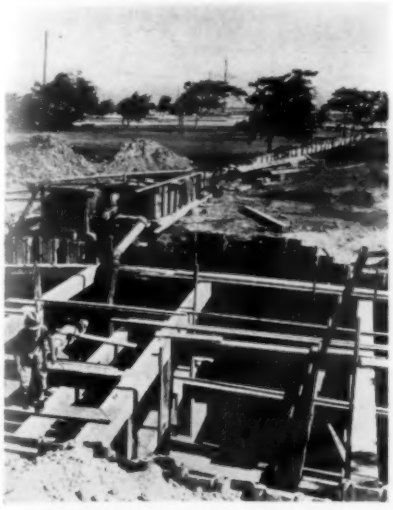
It will serve a long, long time, too, because Armco Sewer Pipe is made of galvanized ARMCO Ingot Iron—proved by 33 years of service. Besides, it's paved in the bottom and fully coated with a special bituminous material securely bonded to the pipe. Write for the 48-page Armco Sewer Book. Armco Culvert Mfrs. Assn., Middletown, Ohio.

ASBESTOS-BONDED ARMCO SEWER PIPE

A PRODUCT ORIGINATED AND DEVELOPED BY ARMCO ENGINEERS

During April we hope you will remember to mention THE AMERICAN CITY.

Sewerage and Sewage Sludge



SEWAGE-TREATMENT PLANT CONSTRUCTION AT WAIKIKI BEACH, HONOLULU, HAWAII

A Caterpillar D 4400 diesel engine powered the pump for removing seepage water during construction

Sewer Regulators in Portland, Maine

A RECENT innovation in sewer appurtenances in Portland, Maine, was the installation of a "sewer regulator" in the Allen Avenue sewer near Washington Avenue. This device, which is fully automatic, regulates the flow of sewage in a main that would become overcharged with excessive rain or melting snow, by closing or partially closing a valve, so that only the amount of sewage can enter the main sewer which it is designed to carry; the remainder is diverted into a surface water drain or an overflow sewer. These devices require attention only about three or four times a year, for the purpose of lubricating the bearings and doing a small amount of cleaning. The regulator is made by the McNulty Engineering Co., South Boston, Mass.

It is planned to install several more of these regulators in various sections of the city in the near future.

A Monolithic Sewer in Astoria, L. I., N. Y.

CONSTRUCTION of a monolithic storm sewer of reinforced concrete, 16 feet wide and 8 feet deep inside measurement and 450 feet long, is under way following completion of excavation by a labor force south of North Beach Airport in Astoria, Long Island, N. Y. Excavation began the middle of September, the work beginning with a cut 22 feet wide and 12 feet deep. The specifications for this WPA job call for "re-routing an existing storm sewer by constructing a monolithic section 16 feet wide and 8 feet deep inside measurement for an approximate distance of 450 feet at an average depth of 10.6 feet." The new section is to be laid on wooden piles, with two large sweep chambers, and an outflow extending 125 feet into Bowery Bay.

Pumping Primary Sludge to Digesters

THE procedure in pumping sludge from separate sedimentation tanks to digesters is of much importance in sewage-treatment plant operation. At the Elmhurst, Ill., meeting of the Illinois sewage-works operators group for the Northern District, a large amount of pertinent data was assembled and presented in the form of a chart which we are privileged to reproduce below.

The discussion at the Elmhurst meeting is well summarized in the following paragraphs from *The Digester*.

1. Insufficient or delayed pumping of primary sludge allows digestion to start in the primary tank, and results in large chunks of sludge rising to the surface. Too frequent or too much pumpage of primary sludge puts much excess water through the digester, resulting in a waste of heat, interference with digestion, excessive amounts of supernatant liquor, a poor quality of supernatant liquor and thin digested sludge.

2. The best pumping schedule for any one plant must be determined by trial and experience. Many factors, such as type of settling tank, character of sewage, working hours of personnel, season of year, kind of pumps, etc., are involved. For example, note the data under Geneva in the table, at which plant a plain hopper bottom settling tank without mechanism is used. Where an operator is in attendance only during the day, it is common practice to pump sludge early in the morning and again just before leaving in the late afternoon, the length of pumping, however, varying widely.

3. The rate of sludge pumpage is important. Rates of 35 to 50 gpm appear most common, as there seems to be no "pulling" of sewage through the sludge blanket at these rates. However, higher pumping rates are reported satisfactory at Kankakee, Rockford, Elgin and Chicago Heights, where cross-collectors with flight type mechanisms are used. It should be remembered that the rate of supernatant discharge is equal to the sludge pumping rate where fixed-cover digesters with no storage tank are used. This is another reason for pumping slowly at such plants.

4. The operation of the sludge collection machinery is important. Center-scraper mechanisms are usually operated continuously, but flight-type mechanisms are frequently operated only 30 to 60 minutes before, and during, the pumping of sludge. Where there are only two or three pumping periods daily, flight-type mechanisms should be operated sufficiently often and long enough to prevent belching-up of chunks of sludge when the mechanisms are started.

5. Accurate sampling and detailed laboratory work on primary sludge is highly valuable. Such data make possible positive determination of digester loading and can be used to excellent advantage in explaining digestion upsets.

A schedule that may work satisfactorily at one plant may be completely out of order in another. Each operator should keep at this problem until he arrives at a proper pumping schedule.

Data on the Pumping of Primary Sludge at Selected Plants in Illinois

	Kankakee	Rockford	Elgin	Aurora		De Kalb	Chicago Heights	Geneva	Hoopeston	Bucyrus
				Single Stage	Two Stage					
General										
Type Treatment	Prim.	Prim.	Tr. Fil.	Tr. Fil.	Tr. Fil.	Tr. Fil.	Act. Sl.	Act. Sl.	Act. Sl.	Act. Sl.
Type Sewers	Comb.	Comb.	Comb.	Comb.	Comb.	Sep.	Sep.	Sep.	Sep.	Sep.
Population Served	22,300	85,000	37,000	49,000	49,000	8300	22,800	5000	5600	3785
Sewage Flow (m.g.d.)	2.3	10.1	4.3	6.6	5.9	1.2	2.0	0.8	0.9	0.94
Primary Sludge										
* Type Settling Tank Mech.	Flight	Flight	Flight	Center Scraper	Center Scraper	Center Scraper	Flight	None	Flight	Flight
Total Gallons Daily	8000	33,900	4750	20,600	20,000	4000	3300	3190	3400	5400
* Gal. per capita daily	0.36	0.39	-	0.42	0.41	0.48	0.20	1.03	0.61	1.42
* Gal. per m.g. Sewage	3480	3350	-	3120	3400	3330	2750	6410	3780	15,480
* Pumping Rate (g.p.m.)	74	120	150	40	40	35	100	100	40	90
* No. Pumpings Daily	10	12	3	5	5	5	8-9	2	2-3	2
* Ave. Pumping Time (minutes)	10	22	10.5	10.3	96	15-60	5-10	25	40	30
* Percent Total Solids	7.5	6.2	4.1	3.6	3.6	-	3.5	2.1	-	2.1
Percent Volatile	63.2	73.7	71.3	65.2	69.2	60.0	69.0	76.8	-	78.6
Sludge Digestion										
No. of Stages	1	2	1	1	2	1	1	1	1	1
Digest. Vol.-(c.f. per cap.)	1.9	1.2	-	2.5	2.5	2.7	4.75	4.1	3.0	3.0
Storage Vol.-(c.f. per cap.)	1.9	2.75	0	0	0	2.6	4.75	0	0	0
Digestion Temp. - (F.°)	98	85-90	89	84	84	85-90	90-96	71	85	85
Gas Prod. (c.f. per Cap.)	1.06	1.35	0.96	0.93	1.10	1.3	0.79	1.42	1.05	1.77
Gas Prod. (cf. per lb. vol.)	7.3	8.9	10.2	10.0	13.0	7.9	15.8	9.0	-	9.0
* % Solids in Supernatant	0.5	0.5	0.1	0.4	0.4	0.3	-	0.5	-	0.2
* % Solids to Drying Beds	8.5	9-10	5.5	6.6	5.7	8.5	7.1	7.1	3.3	2.1
* % Solids - Transfer Sludge	-	5.2	-	-	2.9	-	-	-	-	-

FREEDOM FROM MUD

Allis-Chalmers Speed Maintainer clearing mud from an outlying street in an Indiana city. Working speeds of 3½ to 4¾ miles, plus a travel speed of 9 miles an hour, enables one man to cover a lot of blocks daily.

Put your city on clean, mud-free streets.. streets that invite out-of-town trade . . . streets that help the milkman and groce make deliveries on time . . . streets that reduce driving hazards. You can clear awa mud . . . keep your streets, alleys and park roads smooth and free of ruts . . . with th Allis-Chalmers Speed Maintainer . . . at an economy never before possible. It ope ates for ½ the cost of larger motor graders . . . sells for 1/3 their cost. Burns but o gallon of gasoline hourly. One-man operated. Works at speeds of 3½ to 4¾ mil per hour . . . travels from one job to the next at 9 or more miles per hour. Drawb is always free for pulling mowers, garbage trailers, tree-spraying rigs and other too

Take this money-saving way to smooth, mud-free streets NOW. Ask your Allis-Chalmers dealer to demonstrate the Speed Maintainer on your streets . . . see for yourself what it can do.

ALLIS-CHALMERS POWER

TRACTOR DIVISION — MILWAUKEE, U.S.A.

TRACTORS, ENGINES, ROAD MACHINERY

.. IT DOESN'T COST .. *it Pays!*

APRIL, 1939

Vol. LIV, No. 4

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

The Planning of Canada's Capital City

By HORACE L. SEYMOUR
Consulting Engineer, Ottawa, Canada

Their Majesties, King George VI and Queen Elizabeth, are to visit Canada in May. An important stop of their tour will be in Ottawa, the capital city of the Dominion. It is interesting at this time to consider the history and recent developments of planning in that city.

SIR WILFRID LAURIER, Canadian statesman, maintained that Ottawa should be a center of Canadian hopes and ideals. He was responsible for the establishment in 1899 of the Ottawa Improvement Commission, now the Federal District Commission, which has done much to enhance Ottawa's magnificent natural setting.

In 1912, representatives of the City Council and Board of Trade brought before the Prime Minister the arguments for the creation of Ottawa and its environs into a Federal District. To quote this deputation: "Ottawa is at present the only capital city in the world in which its parliament and government, which should be the supreme power of the country, are subject to the inferior jurisdiction of provincial and municipal laws."

A Federal Planning Commission, appointed in 1913, issued in 1915 a Plan of Ottawa and Environs—not, however, in accordance with democratic planning methods accepted now. Although some parts of the plan have been carried out, it does not seem to have met with the particular approval of civic or Federal authorities. The city was subsequently advised, for many years, in its planning problems, by the Ottawa Town Planning Commission.

Other groups in Ottawa have become interested in the future of the capital city. An organization has been formed for the "Preservation of Woodlands" in the District, and the National Council of Women recently passed a resolution recommending the creation of a Federal District.

Although it would introduce extra problems, it is felt by many that the proposed governmental unit should include not only the city of Ottawa and environs, but also areas across the river in the Province of Quebec, including the industrial city of Hull.* The other point of view is that a Federal District need not be set up as an administrative unit if, as at present possible under recent French legislation, a planning control could be established for the city and surroundings.

On May 29, 1937, it was announced that Jacques Greber, famous French landscape architect, had been secured by Prime Minister Mackenzie King to come to Ottawa to advise on the layout of important government building projects in the Capital.

As the result of M. Greber's work, the Prime Minister announced in August, 1937, some of the Government plans for the early development of the Confederation Park area. The main features were:

Placing of the national war memorial in the center of an island in Confederation Square and facing down a greatly widened Elgin Street.

Extension of Albert Street east across the Rideau Canal and railway tracks as a new traffic artery to link up with Nicholas Street.

Abolition of all parking on Confederation Square and provision for parking under the enlarged Plaza area.

Erection of an uptown postal station at the corner of Sparks and Elgin Streets of architecture to harmonize with the environment of the adjoining Langevin Block and demolition of the existing post office.

Erection of a building to house the Supreme and Exchequer Courts on the cliff of the Ottawa River and slightly to the northwest of the new Confederation and Justice Buildings.

In February, 1938, plans for "a more beautiful Ottawa" were announced by M. Greber, who again visited Ottawa. He confirmed in some detail a part of the previous announcements and made suggestions for future developments that would involve considerable change, all working toward an impressive architectural center.

Officials of the Federal Department of Public Works estimated that reconstructing the central part of the city could be accomplished at a cost of $30,000,000, to be spread over many years.

The following works have been authorized by the Federal Government and at the end of 1938 were completed or in progress:

Demolition of the former post office building
Erection of the national war memorial
Erection of a new postal station
Widening of the Plaza
Erection of a new Supreme Court Building

* City of Ottawa, population in 1938, 143,000; estimated population of Federal District, 200,000.

FIG. 1.—VERTICAL AIR PHOTO OF CENTRAL OTTAWA

The lettered circles show the locations of improvements proposed and in progress for the development of the city's natural advantages, as outlined on this and the preceding page

FIG. 3.—NATIONAL WAR MEMORIAL

As in so many American cities, a large advertising sign on a nearby building is permitted to detract from the beauty of a public structure

Natural Advantages Not Fully Utilized

In Figs. 1 and 2, "A" represents the existing parliamentary group of buildings. Their commanding site (see front cover*) has been the subject of highest commendation by all visitors of note. Quite recently Harold S. Buttenheim, Editor of THE AMERICAN CITY, stated that, of all capital cities he had seen, Ottawa had been most generously endowed by nature with a site for its government buildings. His next comment was that the river front offered a wonderful opportunity for development to enhance and make more available to visitors all the scenic attractiveness of river, cliff and distant hills. He also noted the effects of lack of planning and of lack of architectural control over commercial or other buildings erected near fine government structures. As a visiting architect once remarked, "Ottawa has still the finest site in the world for a capital —in spite of everything that's been done to destroy it."

The dotted lines near the river in Fig. 1 represent proposals that have been made from time to time by Ottawa citizens interested in the best development of Ottawa. Fig. 4 indicates the result of a recent study incorporating some of these proposals. By utilizing the scenic and other advantages of routing this part of the TransCanada Highway along the river front, all tourist traffic can be brought in along waterways and without interference with city traffic.

In Fig. 1, some of the developments proposed by M. Greber are indicated, including the boulevards and tree-lined streets of the future. In Figs. 1 and 2, "B" indicates the location of the national war memorial that now terminates the vista at the north end of Elgin Street. M. Greber regards Elgin Street (to be widened to 160 feet) as the main axis of the city. Confederation Park, "F," will extend from Elgin Street to the Rideau Canal, and with the new war memorial at its apex will extend south of Laurier Avenue. "C" is the site of the Supreme Court now being erected. "D" indicates the location of a new Union Station, while "G" is part of the present Driveway System.

What does all this mean to the Ontario city of Ottawa?

FIG. 2.—AIR PHOTO, OBLIQUE, OF CENTRAL OTTAWA, LOOKING NORTHWEST

The lettered locations have the same significance as in Fig. 1

Urgent Need for More Adequate Control of Land Uses

M. Greber, in conjunction with his work for the Federal Government, has prepared a general plan for the city of Ottawa showing, as indicated in part in Fig. 1, existing

* For the photographs reproduced on the front cover and in Figs. 1 and 2, THE AMERICAN CITY is indebted to the Canadian Government and the Royal Canadian Air Force; and for Fig. 4 to the Canadian Government Motion Picture Bureau.

and proposed parks and boulevards. But, of course, it is not enough to plan only for parks and boulevards. A recent report on the housing situation in Ottawa and a consideration of its economic and industrial situation are indications of that. Most disturbing is the fact that for lack of adequate control of the placing, construction and use of buildings, there are in many parts of the city of Ottawa and environs complaints of misfit buildings, which make extremely difficult the proper development of the localities they deface.

The desirable relationship that should exist between the street and the building on the street has seldom been expressed in Ottawa by-laws. If, as now proposed, Elgin Street is widened farther to the south, Knox Church, recently rebuilt as shown in Fig. 6, will have to come down again. There are lessons here in planning and zoning, emphasizing some of the many mistakes that are occurring with almost fateful regularity in the cities that are not zoned or only partly zoned.

In the central area of Ottawa that is under Federal ownership or jurisdiction, M. Greber is dealing in some detail with park development, the location of monuments and of public buildings. He is also providing for a number of underground garages to serve these buildings.

Benefits Anticipated from Union Station Relocation

Most admirable, to the writer, is the French planner's conception and treatment of the new Union Station area ("E"). The site includes the present railway yards between Rideau Street (a projection of Wellington Street) and Laurier Avenue. The plan calls for the removal of the existing station and adjoining buildings on Rideau Street, and this would improve the present "bottleneck" on Rideau Street. The main entrance of the new station is designed to face west where a wide concrete plaza will cover the Rideau Canal. The view will be that part of Confederation Park dedicated to the memory of Colonel By, the builder of the Rideau Canal. On the west side of Elgin Street will rise an important public building. In all, an impressive view for the visitor arriving in the Capital by train.

More important under the modern conception of city rebuilding is the effect of the station development on the easterly part of the city. It has been found that a city

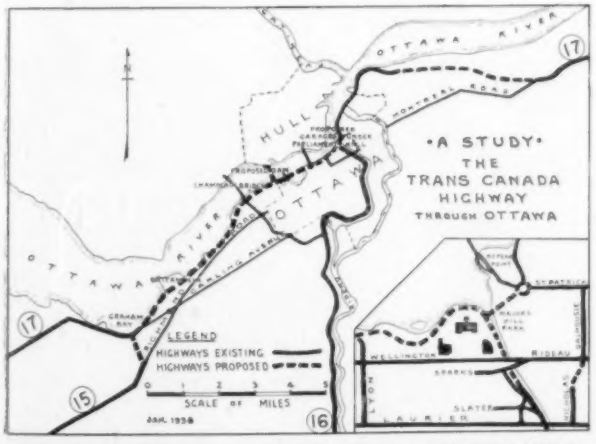


FIG. 4.—RESULTS OF A RECENT STUDY INCORPORATING PROPOSALS MADE BY OTTAWA CITIZENS FROM TIME TO TIME
These proposals are indicated in Fig. 1 by dotted lines near the river

FIGS. 5 AND 6.—SHOWING THE EFFECT OF LACK OF PLANNING AND OF LACK OF ARCHITECTURAL CONTROL OVER COMMERCIAL BUILDINGS
These two structures now face each other on Elgin Street. The new church with its tower was designed to afford an attractive vista at the southerly end of the widened Elgin Street as then proposed. With no protective zoning regulations, stores have been built adjoining the church and a theater (Fig. 5) opposite it. The theater projects in front of the nearby apartment building and exposes a blank wall to the public on this, the most important boulevard in all Canada

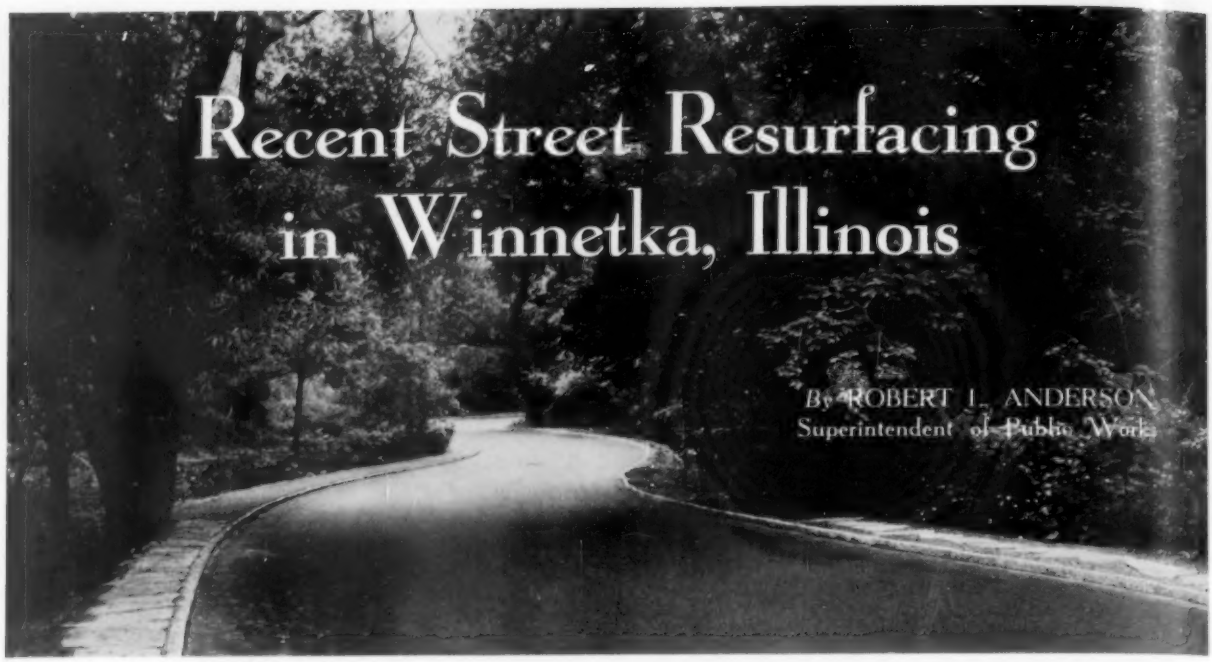
and its citizens cannot escape the implications of slums and blighted areas merely by some of its residents or industries moving farther away, or even outside the city.

The development proposed by M. Greber's plan of the new Union Station demands, in the first place, the elimination of the blighted area that it will replace. To the east the exit from the station is at low level, and the plan calls for a development of boulevards and parks that should stimulate the regeneration of a part of "Sandy Hill," an old residential district. Here is city rebuilding at its best —not merely an esthetic embellishment, but a regeneration of blighted or obsolescent areas.

The crying need for an efficiently planned Ottawa is for studies on which to base a comprehensive zoning by-law to protect existing, and control new, building. This zoning by-law should be so prepared as to ensure that M. Greber's plans for parks and boulevards are not to be made ineffective through lack of functional planning concerned with industrial and commercial as well as residential development.

The national war memorial itself is now complete; work on the base and surroundings of the monument and the widening of Elgin Street is being rushed. Already, however, the lack of functional planning has drawn from the *Ottawa Citizen* a leading editorial, "Muddle Around the Monument," that points out traffic difficulties. As some relief to traffic, the *Citizen* emphasizes the advantages of the subway under Sparks and Wellington (see Fig. 4—inset). This underpass is an adjunct to the proposed waterfront driveway that offers both traffic and esthetic advantage.

EDITORIAL NOTE.—By special arrangement between the editors of *The Canadian Engineer* and of THE AMERICAN CITY, the foregoing article is appearing simultaneously in both periodicals. Its publication date in the Canadian weekly is April 4.



Recent Street Resurfacing in Winnetka, Illinois

By ROBERT L. ANDERSON
Superintendent of Public Works

THE street-maintenance policy in Winnetka for many years has been a continuous program of comparatively low-cost surfacing repeated at relatively short intervals, as contrasted with the frequent practice of permitting a street to go with a minimum of patching until the whole pavement must be replaced. Because of this, we have maintained low-first-cost pavements in good condition over a long period of years at a very low annual cost.

This village is a residential suburb of Chicago with a population of 13,000. There are about 45 miles of streets under village maintenance, of which about 41 miles are paved. In 1918 there were only 29 miles of paved streets and, except for a couple of miles which have been replaced by wider pavement, the original pavements on those 29 miles are still in use, and the date of first construction on some of them runs back as far as 1890, when the original waterbound macadam was built. This was later scarified, shaped and surfaced with tar. With periodic additional surfacing, it is still in use and in creditable shape, at an average annual cost of less than two cents a square yard. Materials which have been successfully surfaced include brick, asphaltic macadam on concrete base, some sheet asphalt and even some concrete.

Desired Quality of Road Surfaces

In order to have a yardstick by which to measure the desirability of road surfaces as produced in Winnetka, we quote below the conclusions reached at the Congress of the Permanent International Association of Road Congresses held at The Hague, Netherlands, in June, 1938.

1. The grip of the road surface is caused by the presence of projections, and the number, size and nature of these are important.

2. Water may be prevented from forming a continuous layer beneath the tire by the presence of projections of such nature that the tire can always make tractive contact with the road.

3. Roughness can be so coarse as to disturb the contact between the vehicle and road surface, and thereby may increase the risk of skidding.

4. The amount of binder in the top surface should be limited so that it does not form a smooth, continuous layer during any part of the useful life of the road.

5. The presence of loose granular material on the surface of the road should be avoided, and when strewn on ice-covered roads, means should be adopted of assisting its penetration into the ice.

6. To meet both wet and dry conditions when lighting a road by means of fixed units, it is desirable that the road surface be moderately smooth and light in color.

7. The road surface should be so constructed as to prevent so far as possible the formation of a water layer, which tends to make the road surface act as a mirror, producing excessively bright, narrow streaks causing glare and thus reducing visibility.

The tar and gravel surfaces laid in Winnetka show up well when judged by these requirements. The surface is slightly "toothy," being composed of pebbles of 3/8-inch screen size or less, with none of the binder showing. Its color is rather light, being that of the stone itself. After the first few weeks there is no loose or granular material left on the surface, giving good anti-skid and visibility properties.

Construction Procedure

The method of laying these road surfaces is comparatively simple. After the pavement to be resurfaced has been thoroughly swept by a mechanical pick-up sweeper, the tar is distributed over the surface at the rate of 0.3-gallon per square yard. It is immediately covered with approximately 30 pounds per square yard of pea gravel, which is rolled as soon as practicable, and the pavement is opened to traffic. The whole operation may be done quite speedily, the street being closed to traffic often for less than one hour and never over two hours.

While this procedure sounds very simple, it involves the coordinating of a number of different units, and the successful management of the details of the job constitutes a major task for the superintendent. Upon the success with which this is done depends the low cost of the work

and the success of the completed job.

In this year's program the tar was applied by two distributors owned by The Barrett Company, which supplied the material, and was taken from insulated tank cars. The tar is applied at about 225 degrees F., some 7,000 gallons being handled per 8-hour day. It was applied in lengths of one or two blocks at a stretch in order to permit immediate covering with gravel.

The gravel was supplied from pits in Beloit and brought in flat-bottom cars to a siding, giving an average truck haul of about 2½ miles. This siding was used, rather than a closer one, to take advantage of a low freight rate, and there was still considerable saving in spite of the need for one extra truck. The unloading was done by a clamshell crane at a cost of $8.00 per hour or 20½ cents per ton. The hauling was done in five 4-yard trucks, one of which was rented, and with a 12-yard, 6-wheeled truck owned by the village.

Applying the Gravel

We believe that the speedy application of the gravel directly from the truck by the tailgate method is most effective. The truck body is raised and the truck started in reverse after opening the tailgate about ¾-inch. This permits a thin but uniform screen of gravel to fall and cover a track for the truck wheels. A 4-yard truck carrying about 5 tons of gravel will cover some 400 feet about 7 feet wide in one trip, while the 6-wheeler makes 800 feet 8 feet wide. By close regulation of the speed, the rate of application can be held within narrow limits, which is an important consideration.

The clean-up operation following the application of the gravel is done by a crew of five or six men and a truck which follows to pick up any excess gravel piles and cover any odd corners or other places that were missed by the trucks. In starting and stopping the tailgate operation, it is difficult to avoid dropping piles of gravel, but this year the trouble has been reduced to a minimum by the skill of the drivers so that it often happened that the clean-up truck had to haul a load of gravel from the cars to provide enough for covering the odd corners.

For best results, the gravel should be bone-dry, but it is never received in that condition. It is applied as received, and we trust in the sun to do the final drying. This is one of the main reasons for picking hot weather for the work.

Rolling

Immediately following the clean-up crew, the gravel is rolled in by a 10-ton roller, which is heavier than necessary but is used because it is available. All that is necessary is to press the gravel firmly into the tar. The surface is rolled only once, with very little lap, so that little time is lost between the application of the gravel and the rolling. As the roller operator leaves a section, he opens the barricades so that traffic can use the surface at once.

In order to prevent the possibility of bleeding of the tar, the amount of gravel applied, about 30 pounds per square yard, is somewhat greater than will be taken up and held by the tar. Traffic soon whips this excess to the gutter, from which it is thrown back two or three times onto the pavement surface by the mechanical sweeper, which is run over

RESURFACING METHODS USED IN WINNETKA, ILL.

1. Applying tar at 0.3-gallon per square yard to the swept pavement surface. 2. Michigan power crane loading gravel from gondola cars to village trucks. 3. Spreading gravel by the "tailgate" method with the truck backing. 4. Applying tar by hand spray in the odd corners not readily reached by the original application. 5. The clean-up crew removing piles of gravel where the spreading truck started or stopped. 6. Rolling just before opening the street to traffic

the street with the gutter broom only operating. After about two weeks, the excess gravel is picked up by the sweeper and hauled to stock piles, from which it is taken for use in patching.

Labor and Equipment

The entire crew required for this work consists of two operators and a helper on the distributors, who were furnished by the tar supplier, one village man on the distributors, one man cleaning cars, six truck drivers, one truck starter, six men on the clean-up gang, one roller operator, and two men placing and removing barricades; a total of 18 village men. The village equipment required included five trucks hauling gravel, one on the clean-up and one on barricades. In addition, it was found necessary to rent one truck for hauling gravel.

Advantages of Tar-Gravel Surface

The advantages of the system of operation used in Winnetka and the type of surfacing are:

1. The streets have a uniform and pleasing appearance for a residential section.
2. The surface is of good quality as regards anti-skid and lighting properties.
3. The base is effectively sealed and preserved.
4. The cost is comparatively low.
5. The work can be done by the city's own forces at a considerable saving under contract prices.
6. The work can be done quickly, so that streets are not closed for more than two hours.
7. Necessary cuts in the pavement can be easily repaired and the surface restored to the same appearance.
8. Because of the effective seal, which is renewed periodically, a minimum of raveling and holes from other sources is experienced, thus keeping the surface in good shape and requiring very little patching.

The chief disadvantage is that the method does not correct any inequalities in the old surface and therefore is not applicable to a surface which has become very rough.

Costs

This treatment is good for an average of about four years, depending somewhat upon the condition of the base. At a cost of 7 cents per square yard and with a small additional item for patching and incidental repairs, we have arrived at the annual cost of 2 cents per square yard.

The work in 1938 has consisted of 75,060 square yards, or 5.42 miles, of pavement surfaced in 3½ days. This required the application of 25,460 gallons of tar and 1,137.85 tons of peastone or No. 5 roofing gravel. The total cost of the work is shown in the following table:

		Per Cent
Tar	$3,118.97	60.4
Gravel	1,285.77	24.9
Labor	552.72	10.7
Equipment (village)	177.20	4.0
Equipment (rented)	31.25	
Total	$5,165.91	100.0

From this table it will be seen that the cost of materials amounted to 85.3 per cent of the entire expense, and that the cost per square yard amounted to 6.88 cents. For comparison, in 1937 this cost was 7.6 cents per square yard on a program involving only 18,990 square yards. In 1936 the cost was 7.15 cents per square yard on 26,203 square yards, and in 1935 it was 6.52 cents per square yard on 67,280 square yards. Variations in the prices of materials affected these figures somewhat, but it can be seen that an average of 7 cents per square yard may be expected. These figures include all costs directly chargeable to the work, but do not include costs of supervision and overhead and depreciation of equipment. This work was financed out of the General Fund as a general street maintenance expense and there has never been any special assessment upon abutting property since that levied for the original pavement forty or more years ago.

Correcting Unevenness

The method of resurfacing described is not successful when the pavement is very rough, since it does not correct unevenness caused by settlement or by the wrinkling or shoving of the old pavement. We have a number of old asphaltic macadam pavements on rather poor concrete bases which have been salvaged by the application of a new wearing surface of cold-laid tar macadam, or, according to the state specifications, tar concrete. The first work was done in 1932 and consisted of one block of pavement on which was placed 2½ inches of material in two courses. After six years this is in good shape, having had a surface treatment two years ago applied as somewhat of an experiment. The cost of this first tar concrete job was $1.09 per yard on 1,024 square yards.

To date, we have laid 28,384 square yards with village forces and about 11,000 more by contract. The work is now done as a single-course job, 1¼ inches thick, at a cost of 59.1 cents per square yard, of which about 82 per cent is for material.

In preparation for this type of resurfacing, the old pavement surface is thoroughly cleaned and manhole covers adjusted to the proposed grade. The old surface is then well patched with fine tar-macadam, filling in all low spots to bring it close to an even contour, so that the finish course may be as uniform in thickness as possible. Any unevenness showing up after rolling is corrected with additional patching. If the final course should vary very much in thickness, even though the loose raked surface might be perfect, the roller would compress the thick section more than the adjoining thin spot, resulting in a bump.

All material is placed directly on the old pavement without any primer or tack coat and adheres well. There is enough tar in it to bind the old material and it can be successfully feathered at the edges without danger of separation.

We are now purchasing the material delivered by trucks to us from a Chicago plant in 12-ton loads. The material is dumped on the street on two 6 x 12-foot steel plates to which an eye is welded for towing by truck to keep the stock pile in the most efficient position relative to the working force. The material is shoveled into place and raked out, steel gage strips being pulled forward as the work progresses, to regulate the thickness. The track left by these strips in the placed material must be carefully filled and raked, or it will persist in the finished job in spite of any amount of rolling.

After placing the final course, the job is rolled three times, first with a 6-ton tandem, then with the 10-ton 3-

wheeler, and again with the tandem, to leave the final surface free of roller marks. The second and third rollings are done on the day after placing, and the pavement is opened to traffic in two or three days after placing, depending on the weather.

The crew required varies with the width of pavement, but we have found that four rakers and four shovelers work most effectively on a 22-foot width. The only equipment required aside from hand tools is a truck, a roller and the steel dumping plates and screeds. With this outfit we average about 1,000 square yards a day on the finish course. An excellent job can be done with a bituminous finishing machine, as was demonstrated on one of our contract jobs.

—From a paper presented before the Public Works Official Section of the Illinois Municipal League at Rockford, Ill.

Tide-Gate for Marsh Drainage

Shell Dam Controls Tidal Flow During Gate Construction at Fernandina, Fla.

By D. L. NORRIS

TO put an end to the mosquito menace and to eliminate an agricultural waste, the city of Fernandina recently completed a project to drain the low-lying marshes east of the city. Expense was shared 45 per cent by PWA and 55 per cent through a city bond issue. The contract was awarded to Patrick J. O'Brien, of Jacksonville, in December, 1937, and completed January, 1939.

The project as a whole consisted of dredging canals in the swamp areas with a Northwest hydraulic dredge and placing a culvert through an existing roadway on fill. The culvert consisted of three pipes 4 feet in diameter, each pipe equipped with Calco tide-gates at the outlet end. In order to get the suction dredge into the swamp, it was necessary to cut an opening through the highway and then bridge this opening with a temporary wood structure while the dredge was working in the swamp. After the dredge finished its work, it was brought out through the same opening, which was then filled, the temporary bridge removed, and the culvert and tide-gates constructed.

Closing the Gap

The variation of tide at this location is 6 feet, but maximum variations run as high as 9 feet. An attempt was made to drive a sheet pile wall across the breach in the roadway fill to stop the flow of tides until the fill could be completed. This proved a failure because of the insecure material into which the pilings were driven.

The method finally used for closing the breach was unusual. It consisted of wood sheet piles, heavy wire netting and oyster shells. After an investigation of the bottom by three divers, bags of shells were placed on the bottom to level and stabilize it. U-shaped cofferdams were built out from each side and filled with oyster shell, while the water was permitted to flow through an opening approximately 30 feet wide between the cofferdams. The final closure of this opening was made by attaching heavy wire mesh on wood frames to round piling. The wire mesh was placed in sections in a vertical position with the aid of a dredge, and oyster shell was placed on both sides of the wire mesh. This operation was continued until the oyster shell was above low-water elevation. The final closure was made by driving wood sheet piling into this bank of oyster shell. Approximately 1,000 cubic yards of shell, brought in on barges, was used for this work.

The oyster-shell dam had many leaks. The water ran more or less freely through the shell but the rush of the tide with its scouring action was stopped.

Placing the Culverts

While the cofferdam construction was under way, the new culverts were placed through the roadway about 50 feet from the temporary opening. The tide-gates were then installed in an open position to permit part of the tide to flow in and out of the swamp, which decreased the difference in elevation in the water above and below the roadway.

After the placing of the shell was completed, the contractor started dumping a secondary dam of earth fill to close the breach in the roadway. The amount of water flowing through the shell dam was not sufficient to greatly disturb this operation, so that the secondary dam was completed up to the elevation of the roadway. This completely prevented the tides passing through the temporary opening. As soon as this fill was widened out, the tide-gates in the culverts were placed in operation. When open, the gates permit about one million gallons of water an hour to flow out from the marshland, but close when the tide comes in, preventing water entering the swamp from below.

With the tides and the flow of water under control, the contractor closed the gap, bringing it to the final road grade. The dam was 200 feet long when finished, and the cost, with the culvert installation, about $63,000. This project was started under John A. C. Bogart, former City Manager, and completed on December 20, 1938, under Acting City Manager Wm. J. Deegan, Jr. J. R. Brennan of Jacksonville was the PWA Resident Engineer Inspector, and the project engineer for the city was John D. Miller, of Gilbert A. Youngberg & Associates, of Jacksonville.

Housing Managers Organize

Establishment of a Managers' Division of the National Association of Housing Officials, to aid in the professionalization of those who administer large-scale housing projects, was announced last month. Raymond A. Voigt, manager of Parklawn, government housing development in Milwaukee, Wis., is President of the Division for its first year.

Serving with Mr. Voigt as a Committee on Organization and Procedure are: Carleton F. Sharpe, Community Manager of Greenhills, project near Cincinnati, Chairman; Lionel F. Artis, housing manager, Lockefield Garden Apartments, Indianapolis; and Paul L. Stannard, resident manager, Cedar Central Apartments, Cleveland.

A Dual Water Supply for Coulee's "Model Town"

By HENRY W. YOUNG

ENGINEERS of the Bureau of Reclamation are proud of their spotless town on the west bank of the Columbia River a quarter of a mile below Grand Coulee dam, Washington. The town is named Coulee Dam. In the airplane view, it is the one in the foreground. The contractors' town on the other side of the river is Mason City. Coulee Dam, now occupied by Bureau employees and office staff of the construction group, will eventually be headquarters for the operation of the dam, so it is permanent. Mason City may or may not be permanent.

The Water Supply

Naturally, one of the first considerations in planning Coulee Dam was a water-works and sewerage system. There were no petitions on the part of abutting property owners, no city council discussions and that sort of thing to go through with. Uncle Sam built the town, and he saw to it at the start that there was to be plenty of good water for domestic purposes, and other water for fire protection, and sanitary flushing, and for the beautiful lawns and shrubbery that now make the model town look as if it had been in existence a decade, whereas it is only about four years old. The water system is a dual one, with fresh spring water for domestic purposes and river water for all other purposes.

The domestic water supply comes from year-around springs in Fiddle Creek Canyon west of the town, which are 200 feet above the Administration Building. The supply is about 18 gallons per minute, which is sufficient for inhabitants and visitors.

For collecting the spring water for the domestic supply, 985 feet of tile was laid in cemented gravel, and the water so collected is run into a small covered reservoir at the springs. From there it is carried about a quarter of a mile by a 3-inch pipe to a storage reservoir 52 feet square, holding 167,000 gallons, which is located in the building shown beyond the open reservoir in the photograph. The open tank is for the utility supply pumped from the river. Since the winters are rather severe, the pipe line from the spring is protected by laying it in a wooden box of one foot square cross-section, filled with diatomaceous earth. Ex-

THE MODEL TOWN OF COULEE DAM IS ON THE NEAR SIDE OF THE RIVER
On the far side is Mason City, the contractors' town, and in the lower left corner are seen the water-supply reservoirs

cess from the domestic-supply reservoir passes over into the utility reservoir.

The domestic supply is softened by a fully automatic Permutit zeolite water softener system having a capacity of 40,000 gallons per day. The water is first completely softened and then brought up to 30 ppm hardness in summer and 20 ppm in winter by mixing with the softened water a portion of bypassed hard water.

Precautions to Prevent Failure

With the domestic water supply limited in quantity to not greatly above requirements, special precautions have been taken that it be not interrupted. Lest, by failure of any part of the system, brine should begin to get into the reservoir, an automatic electric cut-out has been installed to shut off the flow as soon as there is a trace of brine, far too small to be noticeable to the taste. The trouble may then be remedied without having to drain the reservoir, which would require chlorination of some of the river water supply and using it temporarily in the domestic system.

Also, there have been some slides and earth movements in the area from time to time resulting from the excavations. The engineer in charge is taking no chances that some further slight movement might break a water main without his knowledge until one of his reservoirs was empty or dangerously low. So he has arranged two water-level indicators, operated by floats, which show the level of water in each reservoir on dials, as seen in the detail photograph. These dials are visible from almost any part of the town, and visual and audible signals installed in the office also indicate dangerously low water levels.

Among the uses for the utility water supply are lawn sprinkling, toilets, sewer flushing and fire protection. In the month of July this year they pumped 13,000,000 gallons for all utility purposes. The pumps are located in a pier of the highway bridge shown in the middle foreground. There are two Worthington 11-stage turbine pumps delivering 500 gpm each, against a head of 350 feet. Each is driven by a 60-hp motor controlled by float switches in the reservoir. The open utility reservoir is 52 x 152 feet, with a capacity of 322,000 gallons.

CLOSE-UP OF THE WATER STORAGE AND TREATMENT PLANT, SHOWING THE WATER-LEVEL DIALS ON THE CLIFF ABOVE

Distribution of the water supply in the dual system is through approximately 33,400 feet of 3- to 8-inch cast iron pipe. This brings the water up to the street line of the premises. From the street in, copper pipe is used; 1-inch for utility and ¾-inch for domestic services. While the first cost of copper is greater, it is non-corrosive and therefore permanent, and it is easy to install. It has compression couplings and can be put together like gas pipe. It comes in 60-foot lengths, in coils like rope.

While from the airplane photograph the town might be judged nearly level, it is in reality on quite a steep side hill sloping toward the river. From the storage reservoirs to the Administration Building just below, the drop is 60 feet. From there down to the last row of houses, it is about another 100 feet, so there is plenty of pressure for everybody.

The one-direction slope also makes the sewerage system comparatively simple. There is about 2,500 feet of 10-inch trunk and about 12,000 feet of 4- and 8-inch trunk, besides laterals. There are 51 manholes in the system. Disposal is first to an Imhoff tank, 15 x 25 feet and with a capacity sufficient for a town of 800 population. The outfall from that is to the river.

Significant Trends in Municipal Administration

RAPID expansion of low-rent public housing is ranked as the "most significant trend" in city administration in a report to the International City Managers' Association.

The report, by Dr. Leonard D. White, Professor of Public Administration, University of Chicago, said that although low-rent housing was put forward first to provide work for the unemployed, it appears to have dug secure foundations in the municipal field. This development represents a national effort to house adequately a substantial portion of city dwellers who now exist under conditions which breed disease, crime and social discontent, the report said.

Other significant trends in the field of municipal administration during the past year are listed by Dr. White as:

1. An increasing concern by police departments for prevention of traffic accidents, and a decrease in fatalities in 1938 over 1937.

2. Introduction of such new police methods as the pathometer for detecting deception, and the "drunkometer."

3. Stimulation of public health activities by Federal grants and the nation-wide campaign against social disease, organized by the United States Public Health Service. In 1938 there were separate divisions of venereal disease control in 24 states as compared with 13 states three years ago.

4. Completion of a large number of new school buildings and a great improvement in plant and equipment facilities.

5. A "marked increase" in the use of libraries. Circulation in Chicago exceeded 12,000,000; in Detroit it was about 5,000,000. The increases provide a clue to public interests in that they were in economics and sociology, technical and scientific books, and materials on the contemporary world situation.

The report will appear in the 1939 Municipal Year Book, to be published soon by the International City Managers' Association.

Street Maintenance in Maplewood, N. J.

By R. G. SKERRETT

MAPLEWOOD is a township of 26,000 inhabitants in the northern part of the state. It is one of a number of sizable communities in the vicinity of Newark, a city of approximately 450,000 people, and likewise within a relatively short commuting distance of New York City. The township is essentially a residential community, prideful of its civic standing, but unquestionably influenced by the standards of "The City," to which a very considerable percentage of its residents commute daily for business. Maplewood, as an area so named, has existed for several generations, but as a self-governed place it is much more recent.

Within its boundaries, Maplewood has substantially 55 miles of streets and avenues that are paved so as to meet the present-day requirements of motor-driven vehicular traffic of a varied nature. In addition, there are within the township, and forming some of its most built-up thoroughfares, about 10 miles of state and county highways, the fundamental maintenance of which is properly a charge upon the state and county, respectively. Even so, the township is obliged, for the comfort and convenience of its citizens, to devote some time and attention to these highway links.

Of the 55 miles of strictly township thoroughfares, by far the greater percentage of them have roadways of the penetration-macadam type; but some of the streets and avenues either have concrete pavements or are surfaced with sheet asphalt. Those that are paved with concrete are the ones that are subjected to the heaviest of both local and through traffic. The asphalt-surfaced thoroughfares traverse a strictly residential section of the town, and they have been so constructed both for appearance and for the quieter travel they offer. Well-nigh all the thoroughfares are subject to periods of peak use during the outward-bound and returning hours of a large volume of commuting travel; but there is, besides, a continual and very considerable flow of both local and through traffic.

Maintenance Methods

All the roadways have been built in accordance with modern standards. The men responsible for maintenance have, generally, been serving the township for years and, for that reason, have a continuing sense of accountability and a desire to see that their work stands up well under steadily increasing demands. Broadly stated, very little reconstruction work is required in connection with the thoroughfares of Maplewood; and the continual task of maintenance is kept within reasonable limits by vigilant inspection and prompt resurfacing wherever such attention is manifestly necessary. The old saw of our schooldays—a stitch in time saves nine—is kept constantly in mind by Robert Wareing, road and sewer supervisor of the township.

Ordinarily, most of the roadway maintenance work consists in applying a seal coat to bring the wearing surface up to the prescribed level where small unit areas show the need of such attention; and in the aggregate repairs of this sort become extensive with 55 miles of thoroughfares to be kept in order. The seal coat used in such cases is a mix composed of ⅜-inch stone and stone-sand and with 1/3- to ¼-gallon of asphalt per square yard. The township makes its own cold mix in dealing with the average small holes or depressions, and that cold mix is 100 pounds of ⅜-inch stone and a gallon of asphalt. For deeper depressions larger stone is used in the mix.

A severe winter may cause worse heaving and cracking of the pavement than usual, and stretches of from 500 to 600 feet may require resurfacing to a depth of from 1 to 3 inches. When that is the case, the damaged surface has to be cleared away. A job of this sort can be tackled by the township with its own equipment and personnel. A scarifier, attached to the rear of a 10-ton Buffalo-Springfield steam roller, is used. The repair procedure in any area follows, of course, that specified in the primary construction of the 9-inch pavement. The size of stone for each layer and the coating of asphalt depend upon the depth of the repairs and the number of layers replaced. In Maplewood, the penetration-macadam pavements consist of a base course of 2½-inch stone that is laid from 4 to 5 inches in thickness, and then rolled but not coated. The next course, which may be from 2 to 3 inches in thickness, is made up of 1½-inch stone, and, after rolling, is coated with asphalt at the rate of 1½ to 1¾ gallons per square yard. The succeeding course, not more than an inch in thickness, is of ¾-inch stone, which is rolled and then coated with asphalt at the rate of ½- to ¾-gallon per square yard. The finishing coat is dusted with ⅜-inch stone. After brushing over this last coat, the surplus rock sand and pea-stone are recovered and stored in the township yard and contribute to stock piles from which material is drawn for sanding the streets when slippery because of ice or for any other reason. An old stone spreader, owned by the township, is attached to the trucks as they spread stone bought from nearby quarries.

Asphalt Plant

For repair operations of the foregoing scopes, the township plant suffices; and it may make use of either or both of its own Rex pug-mill mixers, each of which has a capacity of about a quarter of a ton of stone and asphalt. Those gasoline-driven units can handle mixtures containing trap rock of from ⅜- to 1½ inches. For spot sealing and small trench repairs, the township has two Littleford asphalt kettles, one of 150 gallons and the other of 200 gallons capacity. The hot mix may be made up of either a natural or an oil asphalt in resurfacing work. For paving-breaking

in small areas and for driving sheeting in trenches or where otherwise needed, the township owns and utilizes a Barco portable gasoline hammer. That tool has been found a handy and adaptable one, and is said to have paid for itself in service. In its street-maintenance activities, the township has at its disposal a fleet of five 1½-ton Ford trucks.

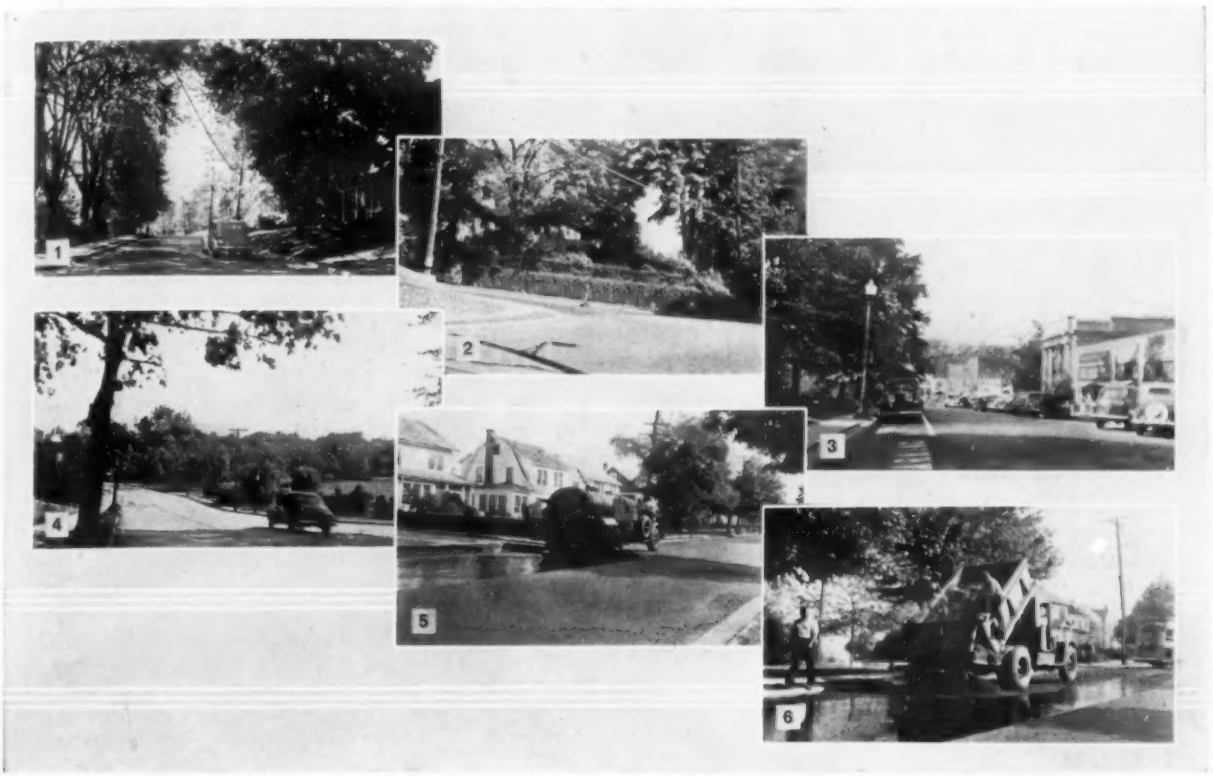
Curbs and Gutters and Utility Cuts

Whenever extensive resurfacing or the widening of roadway pavements becomes necessary, and such jobs exceed the capacity of the township plant and department personnel, then the work is let by contract to qualified people. This is uniformly the procedure in connection with the putting-in of new curbs, gutters, etc. In all such cases, the contractors are required to meet approved specifications, and operations are continually inspected by representatives of the township.

Where gas and water connections have to be made to houses, or street repairs are called for on those connections, the trenching is done by the interested public service companies, but the resurfacing at the excavations is done by the township and charged directly to the companies concerned. However, where the trenching is of necessity on a more extensive scale, such as for water mains, gas mains, or electric conduits, the township permits the interested public-service organizations to do the resurfacing work by employing properly equipped contractors. The jobs, however, are subject to township inspection and ultimate approval of the resurfacing work.

Maplewood, like other growing communities, expands by the extension of streets within the township limits and the upbuilding of the improved areas. The policy of Maplewood has been to place the primary burden of such extensions upon the real-estate developers. The streets so opened up and paved are accepted for maintenance thereafter by the township only provided the road-building has been done in accordance with the specifications drawn up by the local authorities. This procedure saves the township from the incidental primary outlays and imposes upon the developers the obligation of meeting approved and proved standards of construction. Subsequent maintenance is thus held within reasonable limits.

In Maplewood, experience has shown that the streets surfaced with asphalt are easy and not expensive to maintain. In the case of the concrete-surfaced streets, the roadways stand up well under heavy traffic, and usually the principal item of maintenance is that of repouring the expansion joints so as to keep them sealed to prevent moisture from getting into the ground underneath and thus promoting heaving and cracking by alternate freezing and thawing.



PAVING RESULTS AND METHODS IN MAPLEWOOD, N. J.

1. Sheet asphalt thoroughfare in an older residential section. 2. A sheet asphalt pavement meets penetration macadam that climbs a steep grade. 3. The business center is traversed by a penetration macadam pavement. 4. Connecting thoroughfares, surfaced with concrete, lead to and from the community center of the township. 5. Resurfacing a heavily traveled penetration macadam avenue. A 1,130-gallon distributor applying tar. 6. Following up with a 7-ton Autocar and rotary stone spreader; then comes the ironing out with a 10-ton roller

Snow Removal

The township occupies a valley section and the contiguous slopes of two hills, one of which is high enough and abrupt enough to be spoken of as "the mountain." This physical layout is emphasized when snow has to be re-

moved in the winter season. For snow removal the community has at its command nine Good Roads snow-plows, which are brought into service by attaching them to the front of trucks. For that work hired trucks are commonly employed, because they are heavier and of greater power than the township trucks. On the mountainous western area of the town any considerable snowfall is usually cleared away by graders, hired for the work. This is necessary because trucks with plows attached are generally unable to negotiate the steep slopes that have to be cleared. Those streets or avenues that are direct or integral links in traversing state or county highways are also cleared of snow by the township. This is done not as an obligation to the state or county but for the prompt benefit of the affected citizens of the community, rather than to inconvenience them by making them wait until the outside authorities deal with the jobs. On the residential thoroughfares, primary snow removal is limited to plowing the central areas of the roadways and banking the displaced snow along the sides. Later, the banks are broken up and shoveled onto the roadways and cut up and dissipated by traffic. Some of this snow is also sluiced into the storm sewers. In the business center of the township, any snow banks are cleared away and trucked by the township fleet to readily accessible dumping areas. As previously explained, stone sand and pea-stone are scattered over ice-coated roadways or streets made slippery by other weather conditions. No chemicals are employed in dealing with iced traffic surfaces. The township has found the use of chemicals for such purposes too expensive.

Costs

Now as to what street maintenance costs the township of Maplewood. The current budget provides for a total annual expenditure of $64,000 for all the operations of the Street and Sewer Department. As explained by Herbert W. Heilmann, Director of Public Works of the township, $39,300 of that budgetary sum is allotted for street maintenance, street cleaning, snow removal, street marking, traffic signs, and the school patrol established at certain streets near schools. The money is sufficient to permit in the course of a year substantial repairs on about 6 miles of streets and the spot sealing of many more miles. The sealing ordinarily gives good service for three years. It is not possible to do more than approximate the maintenance cost per mile. However, if we divide $39,300 by 55—the number of miles of township thoroughfares—it will be evident that the upkeep, with all the services involved, is well within reasonable limits, and this becomes apparent when one observes the generally excellent condition of the community's thoroughfares. The remainder of the budget of $64,000—that is, $24,700, is for the maintenance of sanitary sewers and storm drains. Because these are either directly or indirectly used for carrying away rainfall and melting snow, there is a connection between the sewers and street maintenance. Again, this figure is susceptible of explanation, inasmuch as substantially $15,000 of the $24,700 is what the community pays annually toward the operating cost of the "Joint Meeting" at Elizabethport, N. J., where the sewage from a number of tributary towns and cities undergoes treatment preliminary to final disposal.

The policy of the township of Maplewood is to provide itself with only enough equipment to meet the major part of its street-maintenance requirements, and to hire, from time to time, from outside sources, any apparatus that may be needed for temporary use and that would be idle over long periods if owned by the township. It is for this reason that the authorities do not include an asphalt distributor in the township plant. They have found that they can save money by hiring one whenever the township facilities are inadequate to deal with the job calling for the services of a distributor. Circumstances in the future may alter this attitude in a number of directions, because Maplewood is growing and its maintenance equipment may have to be expanded accordingly.

Court Halts Menacing Raid on Tax Rolls

MINNESOTA taxing bodies are breathing more easily since that state's Supreme Court upset a device which threatened to remove millions of dollars' worth of income-producing property from the tax rolls, "one of the most menacing tax situations that ever faced Hennepin County or the state of Minnesota," according to Frank J. Williams, Special Assistant Attorney General, who fought the case for the state.

Four years ago information became public that certain owners of Minneapolis real estate had made gifts of valuable parcels to Pillsbury Academy, a preparatory school of small enrolment at Owatonna, Minn., which paid no taxes. In return, donors were to receive life annuities, which were charges on the income of the property, and promise that the property would be returned if the annuities were not paid. Involved were such buildings as a $104,000 mercantile structure and apartment houses said to be worth $94,000, $89,000 and $46,000 respectively. Alarmed authorities believed that as much as 5 per cent of Minneapolis real estate might be removed from the tax rolls under similar agreements.

County Auditor Al P. Erickson and the Board of County Commissioners refused to grant tax exemption to the property used for non-educational purposes. When legal action was taken to compel the Academy to pay taxes, District Courts in Steele County (April, 1937) and Hennepin County (November, 1937) ruled in favor of the school. Appeals from both decisions were heard simultaneously by the Minnesota Supreme Court, which ruled (February 3, 1939) in a 4-to-2 decision that the Academy was not entitled to such tax exemption.

Counsel for the Academy indicated that no further appeal would be taken and that payment would be forthcoming. The County Auditor's bill includes $52,443.51 in back taxes and $8,192.26 in penalties.

Arguments hinged on the Academy's contention that the Territorial Legislature of 1854 had granted exemption in perpetuity to its predecessor, Minnesota Central University of pioneer days. Mr. Williams attacked the claim on the following grounds: that the Territorial Legislature was without power to grant eternal exemption; that the charter granted had lapsed and had not been revived; that the Academy was sharing benefits from tax exemption with others who had no right to them; and that the present institution was not a legal successor to the old one.

The *Minneapolis Star*, a daily newspaper, opposed the transfers as contrary to public policy. City and county authorities pointed out that the donors under such an arrangement were given an unfair advantage over competing operators of commercial buildings.

Both the majority and dissenting opinions suggested that the whole matter of tax exemption should be "re-examined" by the United States Supreme Court.

Johannesburg's Revenue System—Unique Among Large Cities

"The modern world has set itself an urban problem far more difficult than any with which the ancient world was faced; and citizens of the huge industrial cities of today need an inspiration and an idealism greater than ever Jews or Greeks or Romans had, if they are to think of them as homes in any spiritual, or even physical, sense. Yet there is reason to believe that Johannesburg has moved much nearer to the ideal of a community during these first fifty years of her history; and that approach has been largely due to her municipal institutions. How much nearer, how much more of a community will she be when she celebrates her first centenary?"

THE foregoing are the concluding words of an imposing volume, "City Government: The Johannesburg Experiment," by John P. R. Maud, published last month by the Oxford University Press.* In the chapter on "The Finance of City Government" the author discusses the evolution and results of Johannesburg's method of raising local revenues. He explains that in 1916 the Transvaal government required Johannesburg to tax property-owners at a somewhat higher rate in respect of land than in respect of improvements, with the option to the City Council, if it chose, of exempting improvements altogether. "In 1919, it did so choose, and land has been the basis of local taxation in Johannesburg ever since. But the Council has retained the power to tax improvements; and it therefore possesses an unexploited, though legally limited, reserve of taxable property upon which to fall back if necessary."

In summing up the recent history of the Johannesburg system of taxation the author explains that:

"Since 1919 the Council has been able to levy either a total rate of 7*d*. in the pound on land alone, or a rate of 4*d*. on land and 3*d*. on improvements; but it has been unable to exceed that maximum except by leave of the administrator of the Transvaal. . . . In 1920 and in 1921 a rate of 10*d*. in the pound (levied as usual in two half-yearly parts) was imposed, the highest in the history of Johannesburg; but except in those years the rate has never exceeded the statutory maximum of 7*d*. Nor, on the other hand, since 1919 has it ever been less than 5*d*., which it was in 1934/5 and in the two succeeding years. The level of rates has thus been remarkably stable over the whole period from 1903 to 1937. Indeed, the total income from rates only increased from £341,972 in 1903/4, when the population was 109,000, to £587,511 in 1935/6, when the population was 438,000. While population had more than quadrupled, rate revenue had not even doubled.

"The smallness and uniformity of the rate in the pound levied by the Johannesburg Council is due in part to the limit imposed by law. But there are other reasons of perhaps greater importance. First, the Council has not developed welfare services as English town councils have done. It has therefore escaped the necessity of increasing its demands upon the ratepayer to the same extent as English councils have been forced to do by the development of services such as education and public assistance, which directly benefit the poorer members of the community but are paid for by the whole body of ratepayers. And secondly, the Johannesburg Council has tried to raise as much of its revenue as possible by imposing direct charges on the individual users of particular municipal services. Not only are water, electricity, gas, transport, the rent of municipal houses, the hiring of rooms in the town hall, the use of swimming-baths, and the services of the abattoir, live-stock and produce markets, all paid for in this way, but sanitary and sewerage services also.

Revenues from Service Charges and Special Assessments

"Thus in the year 1934/5 a sum of over £43,000 was paid into general revenue as the net income of the sewerage and sewage-farm department, after all departmental expenditure had been met, and nearly £34,000 as the net income from sanitary services. The building-survey branch also

Courtesy of South African Railways and Harbours

ARCADED SIDEWALKS CHARACTERIZE THIS IMPORTANT BUSINESS STREET OF JOHANNESBURG

* See page 111 of the March issue.

contributed nearly £12,000 (though this figure was abnormal); and since a sum of £442,000 was appropriated in that year from the profits of the trading departments (against which £26,728 was set off, on account of losses on the omnibus services), only £585,323 had to be raised by assessment rates. In 1934/5, therefore, when the gross income of the municipality (in round figures) was £3,769,000, assessment rates contributed only some 16 per cent of the total revenue.

"Finally, there is another interesting part of the Johannesburg financial system which has helped to reduce the amount of money to be raised annually by means of the general assessment rate. This is the practice of levying special rates for particular purposes or in particular areas. For example, after 1903, the Council was able to impose a special tramway rate on property-owners in the outlying districts to which tramway track had recently been extended. Two years later similar powers were given to the Council for recovering the capital cost of water-main extensions and of the construction of kerbs, gutters, and footpaths. Further, since 1928 a special road rate of one penny in the pound has been imposed each year on the value of land, excluding municipal properties, and by 1936 this had already yielded a million pounds.

"When the municipal finances of Johannesburg since the Anglo-Boer war are considered as a whole, the two most striking features appear to be, first, that the Council is almost wholly self-sufficient, and secondly, that so small a proportion of municipal revenue derives from direct taxation. In marked contrast to the financial position of Johannesburg during the period of the South African Republic, the municipal budget since the beginning of the present century has been balanced almost without assistance from central government, either provincial or national. In Great Britain the larger towns in recent years have received grants from central government which account for some 40 per cent of their expenditure on revenue account. In 1929 the corresponding proportion for local authorities in Austria was over 77 per cent; in Germany 70 per cent; in Belgium 65 per cent; in France 56 per cent; and in Holland 33 per cent. In the United States the proportion was only 6 per cent. But in Johannesburg, out of an estimated turnover on revenue account for 1937/8 of nearly 4 million pounds, not more than £10,000, or 0.25 per cent of the total, was expected as a grant from central government.

Home Rule in South Africa

"In this respect, indeed, the position of Johannesburg, when compared with any large city in the world outside the Union of South Africa, appears to be unique. It constitutes her chief claim to be considered a genuinely self-governing community; and in the writer's opinion she would be ill advised to risk losing her independence even in return for substantial grants from central government. . . .

"The municipal finances of Johannesburg seem also to be unique in comparison with other large cities in that, although the Council raises almost the whole of its revenue from local sources, only a small proportion of that total is derived from direct local taxation. Attention has already been drawn to this fact in respect of the year 1934/5. In the year 1935/6 less than 15 per cent of the 4 million pounds constituting the gross income of the municipality was contributed by the payers of assessment rates. The special rate of a penny in the pound, levied each year since 1928 for highway purposes, accounted for 2.6 per cent of the gross income. A further 5.4 per cent came from such forms of revenue as licenses, which were not within the competence of the Council to control. But the remaining 77 per cent was raised by various kinds of *indirect* taxation, over which the Council's discretionary powers were almost unlimited.

"The revenue thus derived from indirect taxation consisted partly of receipts from the so-called trading undertakings of the Council and partly of receipts from certain non-trading departments. The former group, comprising the departments concerned with electricity, gas, water, transport, the produce market, the abattoir, and the live-stock market, altogether contributed over 60 per cent of the gross income of the municipality. In each of these departments income exceeded expendi-

Courtesy of African Associated Newspapers

JOHANNESBURG FROM THE AIR

ture; and though the margin was comparatively small in most cases, the electricity department showed a profit of over £200,000 and the water department a profit of over £150,000. That year the non-trading departments, as all the other parts of the municipal organization are called in official publications, contributed nearly 17 per cent of the gross income of the Council. Within this latter class the largest individual contribution, which came from sewerage fees, amounted to more than £226,000; and this merely sufficed to meet the whole cost of sewage disposal. The sum collected in sanitary fees, which was almost as large, not only covered the whole expenditure of the cleansing department, but also left over some £25,000 for the benefit of the general revenue account. The rents and other revenues collected from native locations amounted to nearly £130,000, only £7,000 short of the total expenditure of the department. Building-survey fees contributed £23,000 to the general funds of the Council, after meeting all expenditure in the building-survey department. Many other departments also collected revenue of varying amounts: for example, from individuals wishing to make use of the library, the cemetery, the fire-brigade, or the public conveniences; but in none of these was revenue equal to the corresponding expenditure."

Site-Value versus Differential Taxation

In Mr. Maud's opinion Johannesburg will not easily be induced to return to the practice of levying a flat rate on the value of site and improvement combined. But, he adds:

"The question remains whether she would not be wise to profit from the experience of Durban and consider the imposition of a differential rate. Thereby owners would be taxed at a low rate in respect of improvements, instead of not at all, and at a much higher rate in respect of site-values. . . .

"Certainly, the differential rating policy, which Durban has followed in recent years, can claim the advantages of both the flat-rate system used in Capetown and the site-value system used in Johannesburg.

"In 1923 the Durban Council imposed a general rate, which included a rate on site-value and a rate on improvements in the ratio 220 to 100. It was intended gradually to raise this ratio, and eventually to levy the whole rate on site-value only; and in succeeding years the ratio was in fact raised until in 1934/5 it stood at 255 to 100. Under this system the land speculator is discouraged, as under the English or the Capetown system he is not; for the owner who keeps his land undeveloped as a speculation is penalized, in comparison with the owner who improves his land, by the relatively high rate levied on site-value. Similarly, the owner who builds on his land, or improves the existing buildings, is not penalized to the extent to which he would suffer under the flat-rate system; for though he pays a sum in rates larger than if he had not increased the value of the improvements on his land, the rate at which he pays in respect of this increased value is the relatively low rate levied on improvements. At the same time, if greater building activity increases the demand for municipal expenditure, the Council obtains increased revenue from that portion of the rate which is levied on improvements, and therefore partially escapes those disadvantages of an inelastic supply of rateable value which attend the site-value system used by Johannesburg."

Vacant or Slum Sites for Public Housing Projects?

POINTING out that in selecting sites for low-rent housing projects receiving financial assistance from the United States Housing Authority, full responsibility must be assumed locally, USHA Bulletin No. 18 on Policy and Procedure offers many suggestions which ought to prove very helpful to housing authorities struggling with this problem. In this 20-page mimeographed bulletin, dated February 13, 1939, Administrator Nathan Straus discusses site selection in its relationship to city planning and zoning; minimum size of site required; site density; racial considerations; natural boundaries of the site; exclusion of through streets from the project; transportation costs, and other phases of this complicated problem. On the highly controversial question of vacant or slum sites, the bulletin says:

"Although the objectives of the U. S. Housing Act of 1937 include slum clearance as well as the building of homes for the lowest income groups, it will be well for the local housing authority to begin its site selection study without a predetermined decision as between a slum-site program and the use of vacant or partly vacant land. The availability of properly placed sites of each type should be explored and the comparative advantages, economic and otherwise, of each type should be examined.

"A slum clearance site which may in other respects seem very desirable may, upon investigation, prove to be too expensive to acquire; or the problem of relocating present residents may present serious difficulties. A further analysis of the racial situation may show unexpected complications. As slum sites are generally held by a large number of individual owners, the difficulty of acquisition or the danger of delay may, upon investigation, appear to be serious. Above all, a check of land uses, both existing and trends, in the vicinity of the site under consideration, either with the assistance of the city planning commission (if there is one), or as undertaken by the local authority, may show that the site is better suited to other than residential uses or that it is definitely unsuitable for continued use as a residential neighborhood.

"On the other hand, a vacant site may at first arouse enthusiasm because of its cheapness or its ease of acquisition, or because of its excellent topography or beautiful surroundings. But a more careful examination may show that it should not be selected because it is not properly located with respect to employment opportunities for the low-income families which would be its tenants; or because school facilities or transit facilities are inadequate and the prospect of such lack being corrected is remote; or because utilities are lacking and cannot be extended to the site without considerable expense to the project or to the city; or because its location within the city structure is such that it should logically be put to other than residential use, such as industry or perhaps a public park; or because the site is more suitable for residential development by private industry for a higher income group.

"These are a few of the faults which may appear when the local authority undertakes a careful evaluation of sites to which its attention may in the beginning be hopefully directed. They are cited here in order to emphasize the desirability of making a careful comparative analysis of the merits of a number of sites, before any off-hand decision is made either as to a particular site or as between a slum-site and a vacant land program.

"Where the relocation problem would be serious under a slum-site program, and particularly in communities where it may be expected that more than one project will be built, either presently or within the near future, it may be advisable to choose a vacant land site for the first development. If the slum clearance part of the program is deferred until the new housing on the first project is available or nearly available, the relocation difficulties will be alleviated."

Control of Pollution in Interstate Waters

Four State Health Departments Ratify Agreement to Correct and Control Pollution of Delaware River

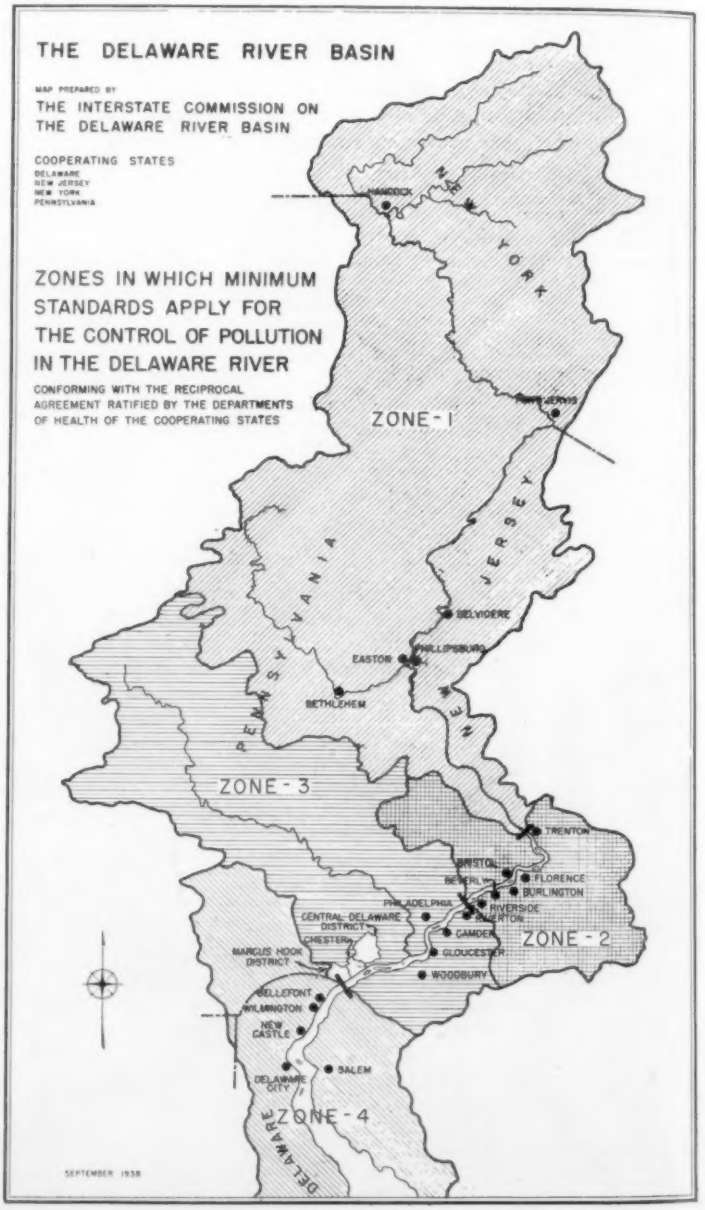
A RECIPROCAL agreement to correct and control stream pollution within the Delaware River drainage basin has been entered into by the four states of New York, New Jersey, Pennsylvania and Delaware, and has been formally ratified and made operative by the Departments of Health of the four states. The agreement is intended to provide uniformity in determining the degree of treatment required for sewage and industrial wastes and other artificial polluting matter. It represents an effort to provide a practical working method of handling these problems in interstate streams.

Minimum requirements, relating to sewage, industrial waste and other polluting matter, have been established. Because of the variable factors in location, size, character and flow, and the many varied uses of the water of the Delaware River, the stream has been divided into four zones, and the minimum requirements have been drafted to meet the conditions of each zone. No sewage, industrial waste, or other artificial polluting matter may be discharged into the river unless it has been so treated as to produce an effluent which will meet the minimum standards erected by the terms of the agreement.

Zoning the River

Zone 1 is that part of the Delaware River and its West Branch extending from the New York-Pennsylvania boundary line to the head of tidewater at Trenton, N. J., and Morrisville, Pa. The drainage basin contributory to this zone, excepting part of the Lehigh River basin, is relatively sparsely inhabited and contains few sewered communities and relatively few industrial establishments producing waste water. The streams draining the area, being in general relatively clean and of high elevation, are well adapted as sources of public water supplies, after treatment or purification. The principal uses of the waters of the Delaware River in Zone 1 are expected to be for water supply after such treatment or purification as may be necessary, and for recreation, bathing, maintenance of fish and aquatic life, agriculture, and for other related purposes.

Zone 2 is that part of the Delaware River extending from the head of tidewater at Trenton and Morrisville to a line drawn perpendicular to the channel of the Delaware River from the mouth of Pennypack Creek in Philadelphia, Pa., to the corresponding point on the New Jersey shore. The drainage basin contributory to this zone is somewhat more densely populated than that of Zone 1, and it contains more sewered communities and industrial establishments. The principal uses of the waters of the Delaware River in Zone 2 are expected to be for water supply, after treat-



ment or purification, and for recreation, navigation, maintenance of fish and aquatic life, agricultural, industrial and other purposes.

Zone 3 is that part of the Delaware River extending from the aforesaid line connecting the mouth of Pennypack Creek in Philadelphia and the corresponding point in New Jersey to the Pennsylvania-Delaware boundary line. The drainage basin contributory to this zone contains populous metropolitan areas including Philadelphia, and Camden, N. J. The principal uses of the waters of the Delaware River in Zone 3 are expected to be for navigation, industrial water supply, and other purposes. The water in this zone, however, should be of such sanitary quality that it will not be unfit for use as sources of water supply, will not be harmful to fish life, and will not adversely affect the quality of the waters of the tidal tributaries.

Zone 4 is that part of the Delaware River extending from the Pennsylvania-Delaware boundary line to the Atlantic Ocean. The principal uses of the waters of the Delaware River in Zone 4 are expected to be for navigation, industrial water supplies, commercial fishing, shellfish culture, recreation and other purposes.

Minimum Requirements

In order to attain conditions of cleanliness and sanitation of the waters of the Delaware River consistent with the appropriate existing and future quality and uses of such waters, certain minimum requirements have been set up for the four zones. These requirements apply to artificial causes of pollution. No sewage, industrial wastes or other artificial polluting matter shall be discharged into, or be permitted to flow or fall into, or be placed in, any respective zone of the interstate Delaware River unless such sewage, industrial waste or other artificial polluting matter shall first have been so treated as to produce an effluent which will meet the minimum requirements for each zone.

Minimum Standards for the Control of Pollution in the Delaware River Basin

ZONE 1

1. Such effluent shall be free of noticeable floating solids, color, oil, grease, or sleek, and practically free of suspended solids.
2. Such effluent shall be sufficiently free of turbidity that it will not cause noticeable turbidity in the water of the Delaware River.
3. Such effluent shall show a reduction of organic substances of at least 85 per cent as measured by the bio-chemical oxygen demand, and furthermore, such effluent in no case shall exceed a bio-chemical oxygen demand of 50 parts per million, and furthermore, the discharge of such effluent, after dispersion in the water of the river, shall not cause a reduction of the dissolved oxygen content of such water of more than 5 per cent. The aforesaid reduction in dissolved oxygen content shall be determined by the average results obtained from dissolved oxygen tests made upon samples collected on not less than 6 consecutive days from points in the river above and below the point or points of effluent discharge.
4. Such effluent shall be of such quality that the most probable number of organisms of the Coli Aerogenes group shall not exceed 1 per milliliter in more than 10 per cent of the samples of sewage effluent tested by the confirmed test, and provided further that no single sample shall contain more than 100 organisms of the Coli Aerogenes group in 1 milliliter.
5. Such effluent shall be sufficiently free of acids, alkalis, and other toxic or deleterious substances, that it will not create a menace to the public health through the use of the waters of the Delaware River for public water supplies, for recreation, bathing, agriculture and other purposes; nor be inimical to fish, animal or aquatic life.
6. Such effluent shall be free of offensive odors and also be free of substances capable of producing offensive tastes or odors in public water supplies derived from the Delaware River at any place below the discharge of such effluent.

ZONE 2

1. Such effluent shall be free of noticeable floating solids, color, oil, or grease, and practically free of both suspended solids and sleek.
2. Such effluent shall be sufficiently free of turbidity that it will not cause noticeable turbidity in the water of the Delaware River.
3. Such effluent shall show a reduction of organic substances of at least 95 per cent as measured by the bio-chemical oxygen demand, and furthermore, such effluent in no case shall exceed a bio-chemical oxygen demand of 100 parts per million, and furthermore, the discharge of such effluent, after dispersion in the water of the river, shall not cause a reduction of the dissolved oxygen content of such water of more than 10 per cent. The aforesaid reduction in dissolved oxygen content shall be determined by the average results obtained by dissolved oxygen tests made upon samples collected on not less than 6 consecutive days from points in the river above and below the point or points of effluent discharge.
4. Such effluent shall be of such quality that the most probable number of organisms of the Coli Aerogenes group shall not exceed 1 milliliter in more than 25 per cent of the samples of sewage effluent tested by the confirmed test, and provided further that no single sample shall contain more than 100 organisms of the Coli Aerogenes group in 1 milliliter.
5. Such effluent shall be sufficiently free of acids, alkalis, and other toxic or deleterious substances, that it will not create a menace to the public health through the use of the water of the Delaware River for public water supplies, for recreation, industrial and other purposes, nor be inimical to fish, animal or aquatic life.
6. Such effluent shall be free of offensive odors and also be free of substances capable of producing offensive tastes and odors in public water supplies derived from the Delaware River at any place above or below the discharge of such effluent.

ZONE 3

1. Such effluent shall be free of noticeable floating solids, oil or grease, and substantially free of both suspended solids and sleek.
2. Such effluent shall be sufficiently free of turbidity that is, will not cause substantial turbidity in the water of the Delaware River after dispersion in the water of the river.
3. Such effluent shall show a reduction of at least 55 per cent of the total suspended solids and a reduction of not less than 35 per cent of the bio-chemical oxygen demand. (It is the intent of this requirement to restore the dissolved oxygen content of the river water in this zone to at least 50 per cent saturation. To accomplish this, it may be necessary in the case of certain wastes, to obtain reduction greater than those required under this item.)
4. Such effluent, if it be discharged within two miles of a public water-works intake or within prejudicial influence thereof, shall at all times be effectively treated with a germicide.
5. Such effluent shall be sufficiently free of acids, alkalis, and other toxic or deleterious substances that it will not create a menace to the public health through the use of the waters of the Delaware River for public water supplies, or render such waters unfit for industrial and other purposes; or cause the water of the Delaware River to be harmful to fish life.
6. Such effluent shall be practically free of substances capable of producing offensive tastes or odors in public water supplies derived from the Delaware River.

ZONE 4

1. Such effluent shall be free of noticeable floating solids, oil or grease, and substantially free of both suspended solids and sleek.
2. Such effluent shall be sufficiently free of turbidity that it will not cause substantial turbidity in the waters of the Delaware River after dispersion in the water of the river.
3. Such effluent shall show a reduction of at least 55 per cent of the total suspended solids and shall be subject to such further treatment as may be needed to prevent a nuisance.
4. Such effluent, if it be discharged within prejudicial influence of a public water-works intake, or of recreational areas, or of shellfish grounds, shall at all times be effectively treated with a germicide, except that in the case of recreational area influence, such treatment need not be provided during the period from October 15 to May 15 of each year.
5. Such effluent shall be sufficiently free of acids, alkalis, and other toxic or deleterious substances that it will not create a menace to the public health through the use of the waters of the Delaware River for public water supplies, or render such waters unfit for commercial fishing, shell-fish culture, recreational, industrial or other purposes.
6. Such effluent shall be practically free of substances capable of producing offensive tastes or odors in public water supplies derived from the Delaware River.

In addition to the interstate sections of the agreement, the states further recognize that the quality of the waters of the intrastate tributaries of the Delaware River and the West Branch are of interstate concern where they enter the Delaware River and the West Branch, so that the same restrictions apply to these tributaries as to the main river and the West Branch as at the points of confluence.

Analyses and tests to check the minimum requirements of waste waters are always to be made in accordance with the latest edition of "Standard Methods for the Examination of Water and Sewage," of the American Public Health Association and the American Water Works Association.

The requirements given for the treatment of sewage and industrial wastes and the sanitary quality of the receiving waters are considered as minima. It is the intent of these requirements to accomplish reasonable and adequate control and correction of pollution. Owing to the many variable factors and to the impossibility of forecasting future developments, it may be necessary to impose additional sanitary requirements, particularly in the case of Zones 2 and 3.

The minima are the first steps toward attaining the objectives sought, and, if necessary, may be further restricted where they do not adequately improve and maintain the sanitary quality of the waters of the Delaware River.

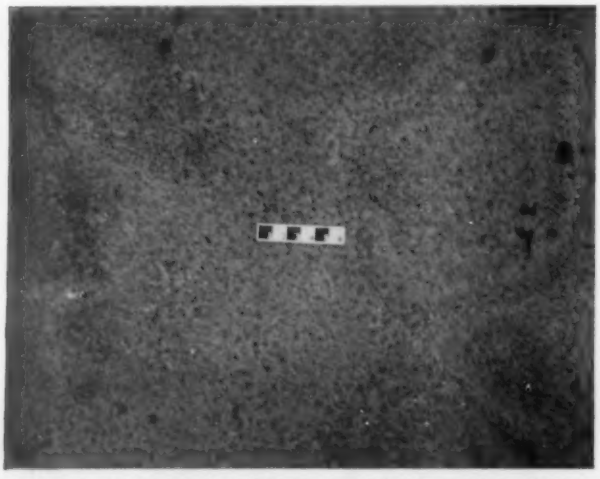
The dates of ratification of this agreement are: Interstate Commission on the Delaware River Basin, May 21, 1938; State Department of Health, New Jersey, June 7, 1938; State Department of Health, New York, June 17, 1938; Department of Health, Commonwealth of Pennsylvania, June 23, 1938; State Board of Health, Delaware, June 28, 1938.

Street-Paving Program in Tallahassee

Over 3½ Miles of Street Paved with Surface Treatment on Sand-Clay Base

THE methods used to turn dusty streets into paved avenues, and muddy gullies into smooth easily traveled roads that are a joy to taxpayer and engineer alike in Tallahassee, Fla., have many interesting features. During 1937 when a major street construction program was in progress the city had a greater rainfall than recorded for any year in half a century, 73 inches in 12 months. The precipitation caused some trouble by the swelling of the clay and the consequent delay in the compaction of the clay fills, but the greatest damage was the loss of eleven blocks of graded and primed base in one day because of an unusually heavy and continuous rain.

Beard Street, 2,500 feet long, was a typical street to be improved as a part of this program. The street had been graded for many years but had no curbs or gutters. Concrete pipe storm drains were laid at the quarter points of the street at an average depth of 5 feet and backfilled with water tamping. An integral concrete curb and gutter was then laid on either side of the street with 27 feet between curbs.



TEXTURE OF PRE-MIX SURFACE ON BEARD STREET, TALLAHASSEE, FLA.

Preparing the Base

The base between the gutters, consisting of clay with 60 to 70 per cent sand, was graded to within 1 inch of the gutter elevation and with a crown of 3 inches in the 27 feet, using an Allis-Chalmers power grader. All during this work traffic was permitted to use the street.

Laying the Pre-Mix Surface

A cold mix of slag from ¾-inch down was made by the contractor, using 0.55 gallon of cut-back made with asphalt of 80 to 100 penetration, per cubic foot of slag. This mix was laid 2 inches thick loose and hand raked and then rolled to 1-1/3 inches with an 8-ton tandem roller. This left the pavement slightly above the gutter elevation for later compaction by traffic and to effect a better seal against the gutter concrete. In addition the slight elevation above the gutter permitted the roller to work right up to the edge of the cold-mix material without damage to the concrete gutter.

This cold-mix surface was immediately sealed with 0.20 gallon per square yard of cut-back and ¼-inch slag was spread over the surface at the rate of 12 pounds per square yard, rolled and the street opened to traffic at once. This program made it possible for property owners and tenants to have access to their garages and parking in front of their homes during the entire period of paving except for the short time in one day when the cold-mix was being rolled in their block and the seal being applied.

This work was done by contract under the direction of the City Engineer, Miller Walston. T. R. K.—821.

The Control of Rats on City Dumps

Methods Used Effectively in Sudbury, Ontario, to Clean Up the Menace

WHERE rats infest a municipal dump, it follows that the adjacent parts of the city will also be troubled with rats. This condition obviously cannot be allowed to continue—for both economic and sanitary reasons. Just such a situation confronted the city of Sudbury during the summer of 1938.

Sudbury is the headquarters of numerous large mining interests of the north country, including International Nickle, and it has a dump covering 42 acres of waste land. The rats that found their living quarters in the dump foraged far and wide, much to the disgust of the citizens and the consternation of the city administration. The Sudbury *Star* began running articles describing the local rat problem, telling how rats were seen on the streets in broad daylight.

Once the aldermen were aware of the extent of the infestation, which had got beyond the control stage, they called in the services of a Niagara Falls, Ontario, firm of professional exterminators. A contract was drawn up calling for the total extermination of all the rats in the city dump. This was a large order and required unusual means of attack. Realizing that baiting the rats had proved unproductive of results, the exterminator turned to more modern methods.

The Attack

The dump was piled high with auto bodies, scrap iron, metal drums and various kinds of débris, not to mention garbage, the latter now eliminated by the recent erection of an incinerator. It was impossible to know where to attack the rats first. The exterminator planned on killing them with Cyanogas calcium cyanide, a powdered material which liberates hydrocyanic acid gas on exposure to the natural moisture in the air. But, before the rat harborages could be located, it was necessary to clear the dump. This was accomplished by burning off the surface, using about 3,000 gallons of old crankcase oil.

THE KILL FROM A SINGLE COLONY OF RATS IN THE CITY DUMP AT SUDBURY, ONTARIO

A SECTION OF THE SUDBURY CITY DUMP

To apply the powdered material under ordinary circumstances, a specially designed foot-pump duster is used. On the Sudbury operation, this method of application was supplemented by the exterminator's ingenuity. The colonies of burrows extended in some cases 400 yards from the actual foot of the dump into brush and over rock ridges where the rats had burrows in sandy soil on the ridges. The colonies of burrows had to be located, marked with flags, and treated individually first. A colony is an area in which a group of rats burrow. In some cases there were forty flags in a colony, each flag marking a mound of burrows used by three or four families for breeding. One mound would have perhaps twelve holes, but only three at a time would connect one to another. This made it necessary to leave all the holes open until there was evidence of dust coming from one or more holes.

In treating these burrows, chloropicrin and Cyanogas were used, but the actual killing of the rats, as well as the obvious repugnance that the rats showed to returning to any of the burrows, was due to the Cyanogas A-Dust. Little difficulty was encountered until the men reached the foot of the dump, for the regular pumps were effective in this work. From then on, they met a nearly perpendicular slope, 125 feet high, infested with burrows and covered with débris of all kinds, including automobiles. The foot-pumps became useless, and an altogether new method of attack was devised. For days the foot of the dump was lined with a 12-foot circle of gas, during which time the head of the dump was burned off, drawing the rats to the top in great numbers.

Then the use of chloropicrin was discarded, because the rats were obviously not getting enough of the gas to sicken them even in two or three days' time, and also because of the discomfort of the men in working with it. Then carbon tetrachloride mixed with carbon disulphide was tried. The weight of this gas made it most effective, as it instantly drew the rats from the burrows under the débris,

THE SUDBURY STAR, SUDBURY, ONTARIO, FRIDAY, AUGUST 12, 1938

Reign of Rats Is Ended at Dump

The Sudbury Star

THE NICKEL DISTRICT'S LEADING NEWSPAPER

SUDBURY, ONTARIO, FRIDAY, AUGUST 12, 1938

WARFARE OPENS ON DUMP RATS, FEW ARE SEEN

Most Are Killed in Burrow, Explains Operator

Rat extermination at the old municipal dump commenced this morning as the Herbert W. Browne Company, of Niagara Falls, opened a gas attack on the thousands of rodents in the dump. The 11 men employed on the $3,500 project were equipped with gas masks, rubber gloves and goggles. On the left is Eddie Servant with a dead rat which had just been taken out of one of the burrows. In the picture on the right, Eugene Lamaureux is holding an open head pump, which is used to spray the liquid gas, while Aime Sauve is holding one of the cylinders used to spread the pulverized gas. The tank is known as a cyanogas duster.—Star Staff Photo

WARFARE OPENS ON DUMP RATS, FEW ARE SEEN

THE LOCAL PRESS FOLLOWED THROUGH AT SUDBURY

but again they did not suffer any serious effects from the gas, owing to their quick passage into fresh air.

Realizing the killing power of the dust which had been used first, the exterminator returned to that, using buckets to broadcast the dust from the slope, immediately followed by buckets of the carbon tetrachloride-carbon disulphide mixture. This drew the rats from the burrows, where they died instantly when entering the Cyanogas dust. This resulted in a wholesale extermination of the rats. It was impossible to estimate the numbers which were seen and heard dying under the automobiles.

An inspection of the dump on October 16 by the city officials failed to show a single rat, so that a final certificate was issued to the exterminator for payment for his work.

Summary

The gassing of rats with this dust has been a recognized method of eradication throughout the United States and Canada, as well as in other countries. In Tacoma, Wash., 20,000 rats were killed with this material on the city dump during the first month of a campaign under the auspices of the U. S. Biological Survey extending from 1928 to 1932. Rochester, N. Y., and Minneapolis, Minn., are other large cities where rats infesting dump areas have been exterminated in this same manner. A work relief project, under the direction of the Indianapolis Department of Health, accounted for an estimated two million rats by the same method in the winter of 1934 and 1935.

In cities where typhus crops out, Cyanogas has been used to kill rats with twofold effect, because the gas evolved from the dust kills the disease-bearing fleas as well as the rats. This double effect has been the reason for the extensive use of this dust by health officers in plague-ridden foreign countries.

In the May 28, 1938, issue of the *South African Medical Journal*, an article on "The Endemic Focus of Plague," states:

"In any campaign against rates, gassing with Cyanogas should take the place of trapping and the use of poison."

Indiana Recognizes Scientific Tests for Drunken Driving

INDIANA is the first state to provide that its courts may recognize scientific tests for intoxication as evidence in cases involving drunken and reckless driving, reports the Safety Division of the International Association of Chiefs of Police. The legislation, which has been signed by the Governor and will become effective June 1, also defines the limits within which results of the test may be considered as evidence when offered in drunken driving cases. Similar bills are pending before the Legislatures of Iowa and Alabama, and before Congress acting for the District of Columbia.

In recognizing that tests of breath and body fluids are an indication of whether a driver was under the influence of liquor at the time of the act of which he is charged, the Indiana law said:

"If it is alleged . . . that the defendant was under the influence of intoxicating liquor . . . the court may admit evidence of the amount of alcohol in the defendant's blood . . . as shown by a chemical analysis. . . ."

In its definition of evidence, the law says that an analysis showing .05 per cent or less by weight of alcohol in the defendant's blood at the time of the act is prima facie evidence that the defendant was not under the influence of intoxicating liquor.

If the analysis shows from .05 to .15 per cent by weight of alcohol in the blood, it is relevant evidence but not to be given prima facie effect in indicating whether or not the defendant was under the influence of intoxicating liquor.

Evidence that there was at the time .15 per cent or more by weight of alcohol in his blood is prima facie evidence that the defendant was under the influence of intoxicating liquor at the time of the act . . . , the law concludes.

By shifting the burden of proof in favor of the driver with little alcohol in his blood and against the driver with much alcohol in his blood, the law may be as effective in liberating the innocent as in convicting the guilty, the Association noted.

Twin Sewage Works Serve a Georgia City

Primary Treatment with Separate Sludge Digestion

A PAIR of sewage-treatment plants as alike as twins were completed in Griffin, in July, 1936, and have been serving this city of 15,000 population successfully since that time. They were built at a cost of $104,600, toward which the city secured a PWA grant and financed the balance of $62,000 from funds on hand. The city is divided into two drainage areas, so that sewage flows from the north side of the city by gravity to the Cabin Creek plant, which serves about 6,000, and to the Ison Creek plant, which serves about 5,000 in the southern section.

The Cabin Creek Plant

The sewage from the northwest corner of the town enters a manhole at the plant through a 15-inch line, and from the northeast corner through a 12-inch line, the two lines joining in the manhole. The sewage then flows to a two-way screen chamber with a hand-cleaned bar screen having 1-inch openings. The screenings are raked off periodically and buried daily in trenches nearby.

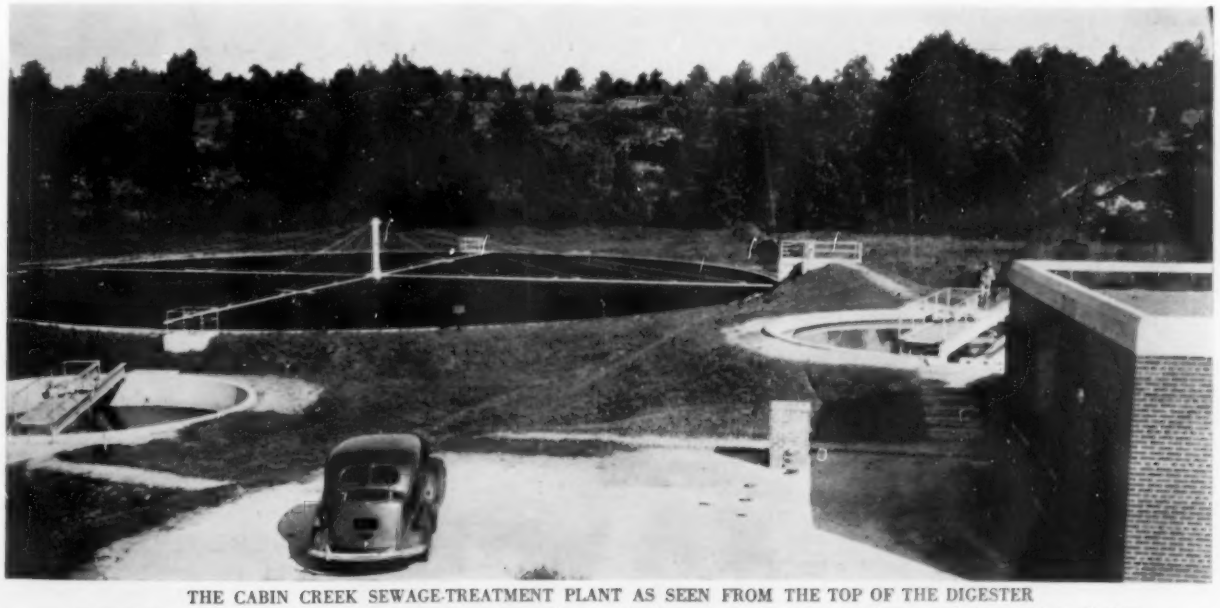
The first treatment is the Dorr clarifier, 35 feet in diameter and 10 feet deep. The sewage enters at the center and flows radially to the effluent weir at the periphery. This clarifier is so arranged that it can be by-passed and the sewage delivered direct to the secondary clarifier or straight through the creek in case of emergency.

The flow from the primary clarifier goes to a PFT dosing tank and thence by siphon to the sprinkling filters. Approaching the dosing tank, the sewage passes under and over plank baffles and then through a ¼-inch screen to remove particles that might clog the distributor nozzles, and then over a 3-notch weir into the dosing chamber. The flow over the weir is recorded by a Gurley 7-day flow register. It is possible to by-pass the dosing chamber, and hence the sprinkling filter, and let the sewage flow direct to the secondary clarifier or to the creek.

The dosing siphon delivers the sewage under a 3-foot head periodically or continuously, according to the flow, to the 145-foot-diameter PFT rotating arm distributor, which spreads it over the bed of 1½- to 3-inch stone 6 feet deep. The underdrains are special-shaped vitrified clay blocks with three egg-shaped channels to which the sewage flows through slots running along the top, as shown in the illustration. The oxidized sewage then flows to the Dorr secondary clarifier, which is 35 feet in diameter and 7½ feet deep. This clarifier also can be by-passed and the sewage sent direct to the creek from the sprinkling filter.

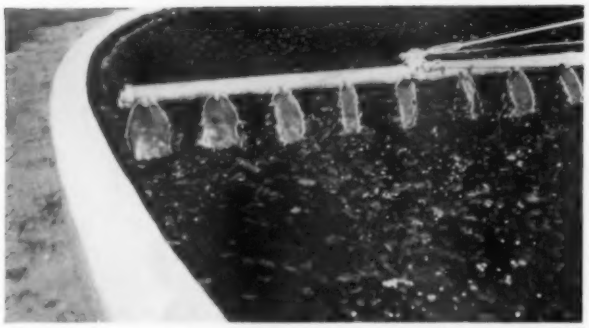
Sludge Handling at the Cabin Creek Plant

The sludge from the primary and secondary clarifiers is pumped by a pair of Rex Chain Belt sludge pumps controlled by a General Electric program clock. The primary clarifiers operate continuously, while the primary sludge pump is operated for five 1-hour periods in 24 hours, spaced to synchronize with the periods of maximum sewage flow. The sludge pump on the secondary clarifier is operated five ½-hour periods in 24 hours, and staggered



THE CABIN CREEK SEWAGE-TREATMENT PLANT AS SEEN FROM THE TOP OF THE DIGESTER

From right to left as shown: the control house, the primary clarifier, the dosing tank, the rotary distributor, and the secondary clarifier



DETAIL OF AN ARM OF THE ROTARY DISTRIBUTOR AT THE CABIN CREEK PLANT

so that both sludge pumps are not operating at the same time.

The sludge pumps and a small laboratory for routine tests are located in an attractive red brick building, which also contains the chlorinator room, not yet equipped for sterilizing the sewage effluent, and a storage room and lavatory.

The sludge is pumped direct to the one-stage digester, 28 feet in diameter and 22½ feet high, with a fixed top and gas dome. The gas, which is produced in considerable quantities, is wasted by burning continuously in a waste-gas burner behind the pump building. Digested sludge is run off by gravity to four sludge beds of 25 x 75 feet. The dried sludge is shredded at the plant and used with great success as a fertilizer on a 200-acre city park, an 18-hole municipal golf course, other small city parks, and around the municipal water works.*

* See THE AMERICAN CITY, November, 1930, page 113.

A somewhat novel and economical method of providing the necessary access to the top of the digester is the use of concrete slabs set on edge to make the risers of a set of steps up the slope of the well-grassed mound.

The Ison Branch Plant

The Ison Branch plant is practically identical with the Cabin Creek plant except that the diameter of the trickling filter is 112 feet and it has no secondary clarifier. The arrangement of the units is somewhat different because of the contour of the ground. The sewage enters the Ison Creek plant through a 15-inch and a 12-inch sewer combining at a single manhole before flowing through the screens to the primary clarifier, 28 feet in diameter and 8 feet deep. This plant also has but three sludge beds, measuring in all 25 x 60 feet. The control house is an exact duplicate of the building at Cabin Creek but, as there is no municipal water available at the Ison Creek plant, a small well is used, from which the water is taken by a small electric pump and delivered to a pneumatic tank, which is also supplied with air for pressure from a small air compressor.

These two sewage-treatment plants, each located about 1½ miles from the center of the city, were designed by Weideman & Singleton, of Atlanta, Ga. They are operated under the direction of H. P. Powell, Superintendent, Light, Water and Sewerage Department of the city of Griffin. The general contractors for construction were Smith Pew Construction Co., of Atlanta, and Burford, Hall & Smith, also of Atlanta, were the piping and equipment contractors. About 24 tons of Acipo pipe, fittings and specials were used in the plant.

T. R. K.—858.

Is Not Your City, Too, Overzoned for Business?

A STUDY of the accompanying table, and of the more detailed tabulations included in Publication No. 5 (issued February, 1939) of the Regional Association of Cleveland, ought to convince any citizen of Cuyahoga County, Ohio, that the Cleveland region suffers from the almost universal fault of zoning ordinances in designating much more street frontage for business use than will ever be developed.

"Overzoning for business," says the report, "is seriously damaging the whole community by its effects on the tax duplicate, on the appearance of the community, and on the health and convenience of the citizens."

These disadvantages are summarized as follows:

It leads to straggling ribbon developments which lower land values over large adjoining areas, and which are inconvenient both for shoppers and for through traffic.

It lowers the value of land for business purposes by providing an oversupply.

It prevents any development of main street frontage for any purpose other than business, thus also lowering its value.

It results in unfairly high taxation to land assessed as business property, though not economically possible of development.

It invites uneconomic overbuilding of small stores and gas stations, to their own and competitors' disadvantage, resulting in the likelihood of bankruptcy and tax delinquency.

It invites speculation in land as well as in business, keeping frontage out of a use desirable to the community in expectation of future development that will never arrive.

It hampers the future widening of traffic streets, in those municipalities where adequate setback lines have not been established.

It leads to disorderly development, making the main streets of the city unattractive both to citizens and to visitors.

Its economic, social and esthetic evils have made it one feature of our zoning very much in need of immediate revision.

The report urges that the city of Cleveland and the villages of Cuyahoga County prepare plans for the sound development of all parts of the Cleveland region, and by revising earlier compromises in the light of new experience and changed trends, take the next step of improving their zoning as a force for the economic, social and physical betterment of the community.

COMPARISON OF FRONTAGE BY ACTUAL USE AND BY ZONING

Totals for 289 Miles of Street Frontage

Percentage of Total Frontage by Use and by Zoning

	Residential, Public, Semi-public Uses		Retail Business & Commercial Uses		Industrial Uses		Vacant
	Used	Zoned	Used	Zoned	Used	Zoned	Used
17 Principal Streets	28.8	5.5	51.2	87.9	5.1	6.6	14.9
44 Major Streets	43.4	21.6	34.5	77.2	2.5	1.2	19.6
43 Secondary Streets	35.5	10.3	45.0	80.0	6.1	9.7	13.4
16 Shopping Centers	28.6	32.7	43.2	66.7	1.5	.6	26.7
Suburban Thorefares	30.3	12.8	37.7	86.5	.6	.7	31.4
Average	33.7	11.0	45.5	82.8	4.7	6.2	16.1

OVERZONING FOR BUSINESS IN THE CLEVELAND REGION

Municipal Asphalt Plants Run by Incinerator Steam

Unit Drier and Mixer on Two Plants Serve Needs of Manchester, N. H.

FOR the past twelve months the two asphalt plants owned by Manchester, Queen City of New Hampshire, have been operated six days a week and the asphalt heated continually by steam from the new refuse incinerator also located in the City Yard at Maple and Valley Streets. This has greatly simplified the operation of the asphalt plants, doing away with the operation of four vertical boilers.

A spur track running into the City Yard permits easy delivery of stone and sand, which are unloaded to three stockpiles, ¼-inch, ¼- to ½-inch, and ¾- to 1¼-inch, by an electric locomotive crane with a ½-yard clamshell bucket. The plants are not equipped with weighing batchers, but considerable success has attended the use of wheelbarrow loading of the plant, using a unit weight of 225 pounds per loaded wheelbarrow.

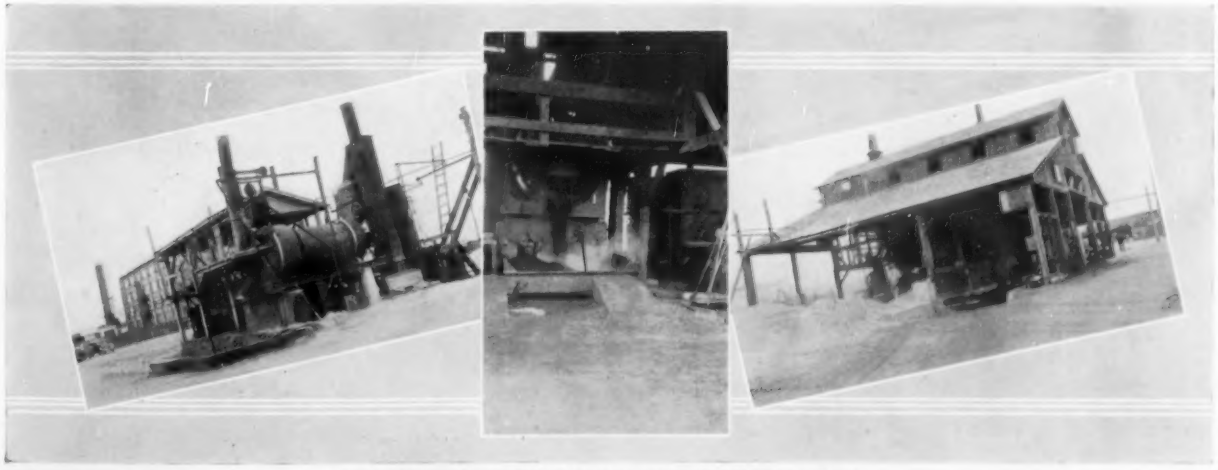
The two plants are located close together so that the same stockpiles serve both. The material is hand-loaded to the wheelbarrows and wheeled to the cold elevator, which delivers the material direct to the drier. The drier of this Warren Brothers plant is equipped with a spiral feed which carries the material from the loading end to the far end and back, until it has been thoroughly dried. Then the gate between the drier and the mixer, which is built into the end of the drier, is opened and the dried material is run into the mixer. This is similar in construction to the drier, but shorter. The material, with the asphalt, is thoroughly mixed by the spirals, and when the mass is homogeneous, the end gate is opened and the batch delivered to the waiting truck. This straight-line drying and mixing operation has certain advantages in space requirements. The gates between the drier and the mixer and the delivery gate from the mixer are similar to the delivery gates used on non-tilting mixers. The determining factor in the opening of the gate between the drier and the mixer is the temperature. The material is run into the mixer when it has reached 350 degrees F. The unit drier and mixer is run at 12 to 14 revolutions per minute.

In order to facilitate batching and drying operations, a batch-box is built over the drier at the entrance end, where one batch of material can be held while another is being dried in the drum and a third is being mixed with the asphalt. The stored batch is released through a bottom-dump gate to a chute into the drier. Only one man is required for the operation of the entire plant and he is located on the control platform at the delivery end of the mixer. He weighs out the asphalt, watches the temperature of the material in the drier and operates the various gates. The drier proper is 12 feet in length and 48 inches in diameter. The mixer is of the same diameter and 4 feet long.

Fuel oil for the drier burners is stored in a 3,000-gallon tank about 1,000 feet from the plants and is delivered as required by a Blake & Knowles pump to the burners through a pressure tank over each plant. The fuel oil is vaporized at the burners by steam at 150 pounds pressure. The drier is driven by the same steam engine formerly used with the plant's own vertical boiler but with steam from the incinerator.

Asphalt is stored in three 1,000-gallon tanks at each plant. They are both steam-jacketed and have steam coils inside the tank. The asphalt is delivered to each plant by Warren Brothers steam-jacketed pumps through a loop with a three-way valve at the weigh-box.

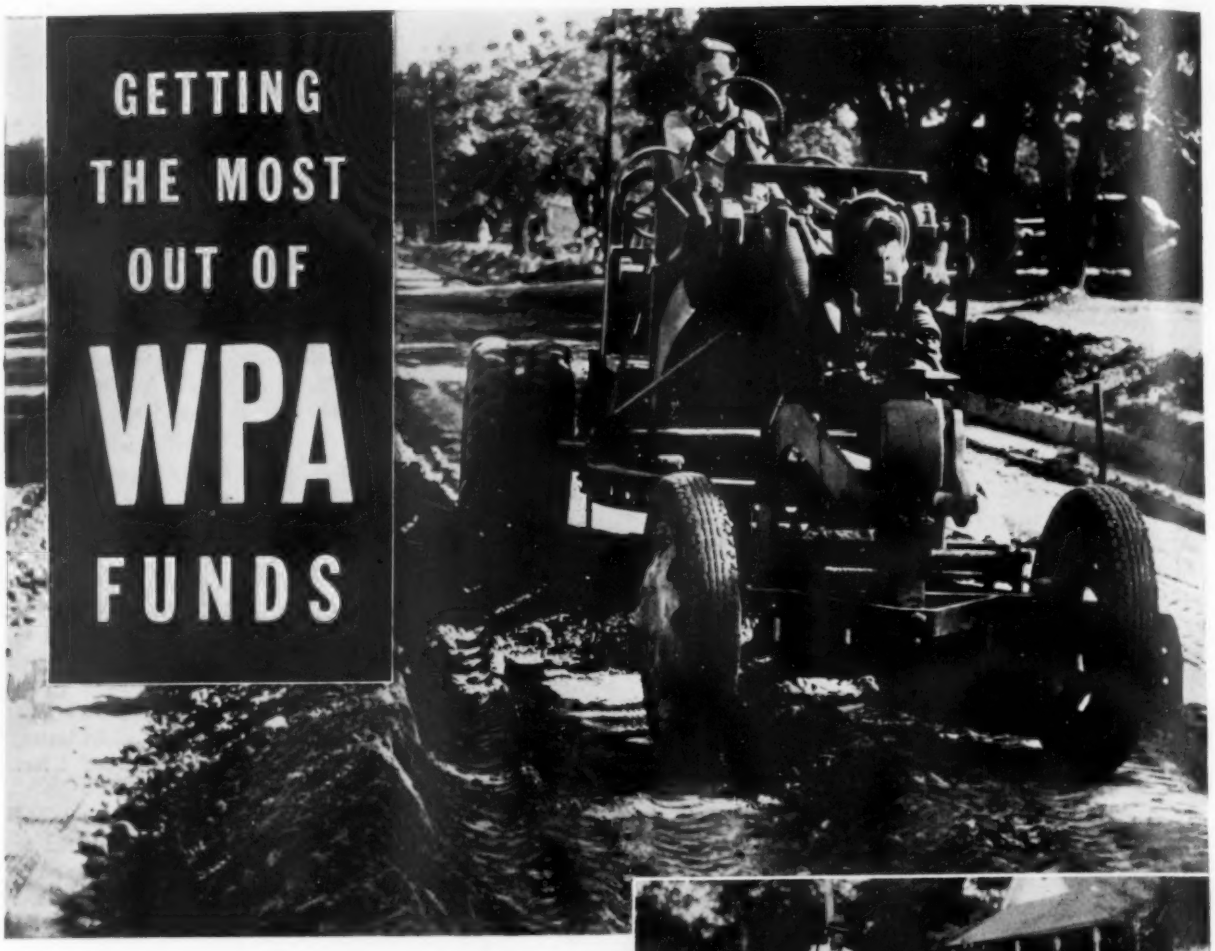
Each plant has a capacity of over 100 tons of mixed material per day, producing 90 batches per 8-hour day.



THE MUNICIPAL ASPHALT PLANTS OF MANCHESTER, N. H.

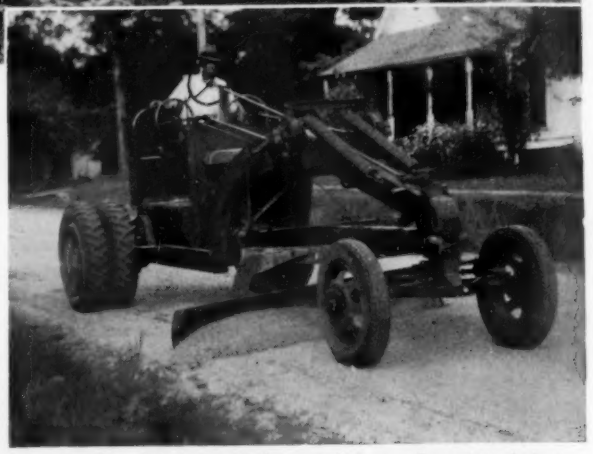
Left—The plant which has not been housed, showing the depressed roadway in the left foreground for loading trucks. Center—Dumping a batch from the mixer of the covered plant shown at the right

GETTING THE MOST OUT OF WPA FUNDS



Many smart city officials are working Adams motor graders along with WPA labor on street improvement programs, thus getting the limit of benefit from WPA funds. Above is a No. 20 building sub-grades for a black-topping program in a southern city of 2,500. This little grader, (it costs only $2,000), is paying for itself on that project alone and for years it will be available for keeping unimproved streets and alleys always in good shape.

Mail the attached coupon for complete information on this remarkable little machine.



The No. 20 is ideal for grading and maintaining streets, alleys, parkways, airports, playgrounds, etc. Available with scarifier and snow plow.

ADAMS MOTOR GRADER NUMBER 20

J. D. ADAMS COMPANY, Indianapolis, Indiana

Gentlemen: Please send me complete descriptive folder on your Adams Motor Grader No. 20, which you recommend for street and alley maintenance.

Name .....

Title .....

Address .....

AM 4-39

Why not remember to mention THE AMERICAN CITY?

Six men are required for loading and wheeling the material to the cold elevator of each plant; one man pushes the material into the pit of the cold elevator, and then there is the single weigh man who operates the plant, and one man who rakes the material from the chute to the trucks and also oils each truck body as it arrives at the plant. The two plants have been in service 23 years and are duplicates. One is housed with a roof but has open sides, and the other is completely open to the weather. The drums on the plants were renewed two years ago, the kettles were new nine years ago, and the spiral feeds for the driers and mixers are replaced every three years.

The two asphalt plants in Manchester are used for asphaltic concrete, sheet asphalt, leveling course material, and seal coat material. This latter is really a sand mix. There is also a pea-stone mix used for patching and for sidewalks.

Asphaltic concrete is made with five wheelbarrows of the ¾- to 1¼-inch material, three wheelbarrows of ¼-inch stone, five wheelbarrows of sand, and 175 pounds of asphalt.

Leveling course material consists of four wheelbarrows of ¾- to 1¼-inch stone, four wheelbarrows of ¼-inch stone, five wheelbarrows of sand, and 175 pounds of asphalt.

Seal coat or sand mix consists of eleven wheelbarrows of sand and 190 pounds of stone.

Sheet asphalt consists of three wheelbarrows of ¼-inch stone, two wheelbarrows of ¼- to 1¼-inch stone, 6 wheelbarrows of sand, and 190 pounds of asphalt.

All loads of the mix are weighed on the scales at the entrance to the yard, so that the production of the plant is known for every day of operation.

Steam for the plant operation is run from the boilers of the incinerator through about 200 feet of uninsulated 4-inch Van Stone flanged steam pipe. The pipe is insulated inside the buildings because of the heat, but there is little need of insulation in the line to the plants. The steam-jacketing of the asphalt tanks has to be bled constantly so that all condensate is removed. Further, the incinerator produces much more steam than is required for the asphalt plants, and wastes steam at regular intervals when the pressure reaches more than 150 pounds. The asphalt plant uses the steam for only five months a year, since that is the paving year.

The pair of asphalt plants owned by the city of Manchester are operated under the direction of Francis B. Kenney, Commissioner of Public Works and Street Superintendent, with Harold J. Hughes as Superintendent.

T. R. K.—900.

Who Is Right—H. G. Wells? Or Robert Moses?

DISCUSSING "The World of Tomorrow" in the World's Fair Section of *The New York Times* of March 5, H. G. Wells predicted for a not-very-distant tomorrow an immense change in the landscape of city and country alike:

"In the first place, the new methods of communication and transport that are still increasing in speed, precision and safety have scarcely begun to produce their inevitable effects upon the distribution of population. It seems that the concentration of a majority of humanity in towns and cities is now no longer necessary, and, if it is now simply a traditional gregariousness that makes the townsmen bunch together, it is quite probable that presently there may be so rapid a dispersal that the difference of town and country will vanish altogether. . . .

"It is a hard saying for New York, the largest, intensest wen of humanity in existence, that already it has nearly outlived the forces that gathered it together. Yet that is so plainly the case that even in a score of years or so New York may be scattered to the four quarters of the earth."

Writing in the same section, on "The City of Tomorrow," Robert Moses called attention to recent progress towards abolition of the overcrowded, odorous slum districts that lack of proper planning had created, and towards increased provision of free recreation facilities in urban areas, and added:

"The most extraordinary and fantastic predictions are made about impending changes in the life of the city. There are academic planners who believe the metropolis will be completely decentralized and that the majority of its inhabitants will live in satellite outlying villages. It is prophesied that Manhattan Island will be entirely a business district with only a fringe of residences. I do not believe in these pictures. It seems much more likely that the pattern of the city will remain much as it is, with business, industry, various types of residential usage, recreation and public improvements much more clearly defined.

"Manhattan no doubt will shrink in population, but once slum clearance becomes a reality people will move back rather than move out, in order to be near to business centers which will not move far from where they are now. In other words, the tendency will be toward stabilization rather than revolution. . . .

"A Rip Van Winkle returning to New York City twenty or fifty years hence would be astonished at the changes, but he wouldn't be lost."

THE AMERICAN CITY agrees with the prediction of Commissioner Moses rather than with that of Historian and Novelist Wells, subject to the essential qualification that New York and other great cities will come to realize—and act promptly on the realization—that the price of survival is a large measure of replanning and rebuilding. The city of the future assuredly will be much more spacious and more livable than the city of the present. It can grow out of that city only by the slow and costly process of adapting its nineteenth century pattern to the design of a twentieth century community. As Professor William F. Ogburn of the University of Chicago said, in this same notable section of *The New York Times:*

"The city of the nineteenth century, compact within its boundary, is disappearing. It is being merged with a great area surrounding it, sprawling but unitary in character, a new type of population center for which as yet there is no name. 'Metropolitan community' is the phrase most often used to characterize it. . . .

"The old political boundary line of the city has little meaning for mobile populations or contemporary business enterprises. But it is slow to change. In the Chicago metropolitan area there are 1,500 separate governments. There should be only one. Gangsters learned this early and have taken advantage of it; hence G-men supplement local police. Health problems are another example, since germs do not recognize the city limits. . . .

"It may be safely said that the forces of social change are accelerative. We may, thus, on the basis of the data presented, look forward with a high degree of probability to an even greater social advance during much of the twentieth century than occurred in the nineteenth."

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420 LEXINGTON AVENUE NEW YORK, N. Y.

Eagle-Eyed Signal Controls Milton's Worst Intersection

Complicated Cycle Combined with Special Features for Pedestrians, Fire Apparatus, Railroad Gate, Night Flashing, and All-Red Emergency

By J. HARRY HOLMES
Chief, Fire Department and Superintendent of Wires, Milton, Mass.

IT IS doubtful whether any other traffic-signal installation in the country provides as great a combination of flexibility and safety as does the Eagle signal system at the junction of Bryant Avenue, Edge Hill Road, Adams Street and Granite Avenue, in Milton, Mass. It has been doing a great job for five years.

In keeping with the practice of the Massachusetts State Engineers, right and left arrow lenses are used in two of the signals employed at the intersection. These lenses direct traffic to make right or left turns at the proper times, and thereby keep much traffic safely moving which, with the conventional type signals, would be required to wait for the green light. When no pedestrians are using the intersection, there are three distinct periods of traffic movement with each cycle of signal operation; but the use of right and left arrow signals keeps considerable traffic moving in a right or left direction during periods when a red light stops traffic from crossing straight ahead and colliding with traffic approaching across its path.

For the Pedestrian

The equipment provides for the pedestrian, by convenient push-buttons in the signal standard, which, when pressed, cause signals to show red and amber on all faces, thereby stopping all vehicular traffic when practicable. However, pedestrians cannot abuse this feature, because, when they have had a reasonable interval in which to cross, a warning signal indicates that they must clear the intersection, and then vehicles are again permitted to flow. Vehicles continue for a predetermined interval before pedestrians can again cause the signals to show the red and amber "pedestrian go" indication.

Fire Apparatus

Since the fire apparatus from a nearby station house must often rush through this intersection, means have been provided whereby signals may be changed to red by merely pushing a button in the station. The change to red is preceded for three seconds by an amber light on all signals, thus eliminating danger of collisions due to sudden stopping. It is not necessary for any one to shut off the red signals after the fire apparatus has passed, because the signals automatically revert to normal operation after a predetermined adjustable interval of possibly 15 seconds.

Railroad Trains

When a train is about to cross the intersection, the action of the gate-men in lowering the gates automatically causes the signals to show red lights to traffic moving toward the railroad crossing; but, again, these red lights appear only after a suitable amber warning period on the signal lights. While traffic moving toward the crossing is held up by red signals, other traffic may move on a green light, north or south, on Granite Avenue.

Flashing Late at Night

During the late hours of the night, when the volume of traffic is very low, the signals may be switched to a flashing condition, with certain signals flashing amber and others flashing red. With such controllers, amber lights usually flash on the street with most traffic, and red lights on the cross streets.

The Cycles Can Be Varied

Variations in traffic volume during a day make it desirable to increase or decrease the different cycles. The controller is equipped with a time switch which permits this. At the same time that the cycle length is varied, this time switch may also increase or decrease the percentage of the cycle allotted to any time period within the cycle. For instance, the pedestrian period may be shortened even more than the total cycle is shortened, if it develops that during periods of light vehicular traffic, the volume of pedestrian traffic drops off to an even greater extent than does vehicular traffic. The controller is also provided with a manual control feature which works out satisfactorily during the very heavy summer travel to the beaches.

Safety First

One characteristic of the equipment is its safety features. In spite of the many ways in which the signals may operate, there is no change to a red light which is not preceded by a warning indication. The pedestrian period does not suddenly end and permit vehicles to bear down on pedestrians. On the contrary, there is a red (alone) indication for three seconds on all signal faces at the end of the pedestrian period, which warns pedestrians that they must clear out of the road.

The signal indication which stops traffic when the railroad gates are being lowered takes precedence over all other signals because, obviously, traffic must stop for a train under any circumstances. Next to the gate signal, the fire-department signal takes precedence over all signals. Pedestrians and drivers get a warning if either of these two emergency signals is to show. This warning light always appears before an emergency signal, even at night when signals may be flashing amber or red.

When father was a boy

Even so short a time ago as our father's generation, there was still much localized resentment against installing "these damn-fangled costly water systems". "If our water was good enough for my father to drink . . ." was heard in many a town meeting of that time.

Today, the typhoid rate of North America is the lowest in history . . . adequate confirmation that liquid chlorine is doing its job well.

Solvay's new "Big 3" Liquid Chlorine Service is designed to fulfil the requirements of modern water purification and sanitation systems. This service is not only designed for quick and convenient delivery of Liquid Chlorine. It is a service system upon which State and municipal authorities can depend for adequate supplies in times of emergency . . . upon which they can depend for advice and technical assistance when it is required.

Solvay Liquid Chlorine shipments are now routed from Syracuse, New York; Hopewell, Virginia; and Baton Rouge, Louisiana. Your inquiries on Solvay Liquid Chlorine are cordially solicited. Please write to the nearest branch office listed below.

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LIQUID CHLORINE

How Much Is a Million Dollars?

It Is What Detroit Taxpayers Saved in Nine Years by Mechanical Procedure in the Office of the Board of Assessors

By KENNETH J. McCARREN
Vice-President, Detroit Board of Assessors

JUST nine years ago, in 1930, the Detroit Board of Assessors spent $171,000 to mechanize its offices. Convinced that the hand methods it was using were inaccurate and wasteful, it predicted that the equipment it purchased and the modern methods it planned to install would result in a saving sufficient to justify the expenditure.

Now, in 1939, we are delighted to report that this investment has saved more than $1,000,000 of the money of Detroit taxpayers in the nine-year period it has been in use—and $1,000,000 is a lot of money. In Detroit, for example, this is what it will do:

"While I am proud of having had a part in the installation of this equipment, and of having effected a saving for Detroit, I am also interested in the modernization of other offices. I believe that our experience should be an incentive to other assessors to supplant their present manual and obsolete methods by up-to-date mechanical procedure."
K. J. McC.

It will run the entire Public Library service of the city—a service, by the way, of which Detroit is definitely proud; *or*

It will maintain all Detroit's public buildings for four years; *or*

It will provide all the public lighting service for a year and a half—and Detroit is one of the best-lighted cities in the world; *or*

It will completely care for the work of Detroit's Receiving Hospitals for a period of one year; *or*

It will maintain Detroit's splendid system of parks and boulevards for 15 months.

In short, the taxpayers of the city of Detroit, as a result of improved methods in the offices of the Board of Assessors, have actually received without cost to them any one of the above services for the time mentioned.

To understand how this impressive saving has been made, let us note, first, the equipment which Detroit purchased.

To replace the inaccurate, tedious, hand writing and typing of tax records, including personal assessment rolls, tax return forms, tax notices, bills, etc., modern automatic addressing machines were installed. The complete city tax record was embossed on metal plates. These plates print through a ribbon, producing records exactly like typing. The realty plates, for example, are in two sections. Each makes up a unit which is a complete record of a parcel of property in the city. One section contains the owner's name and address; the other section contains the property description and dimensions. If the property changes hands, only the section containing the owner's name and address need be changed, the other section remains unchanged.

Naturally, chances for error just don't exist; and errors in our tax records have been almost entirely eliminated, because once the information on the plates is proved correct, it stays correct—permanently.

And where formerly the assessment roll and the two tax rolls were typed all at the same time, the assessment roll was required seven months previous to assessment date; consequently, the city tax roll was typed nine months previous to its use by the Treasurer, and the county rolls fourteen months previous to use. During the intervening period, between 60,000 and 80,000 parcels of property changed hands, requiring pen-and-ink corrections of the three records. Now, the master plate record is kept up to date at all times, and the records for the three offices are produced from it at the exact time they are needed.

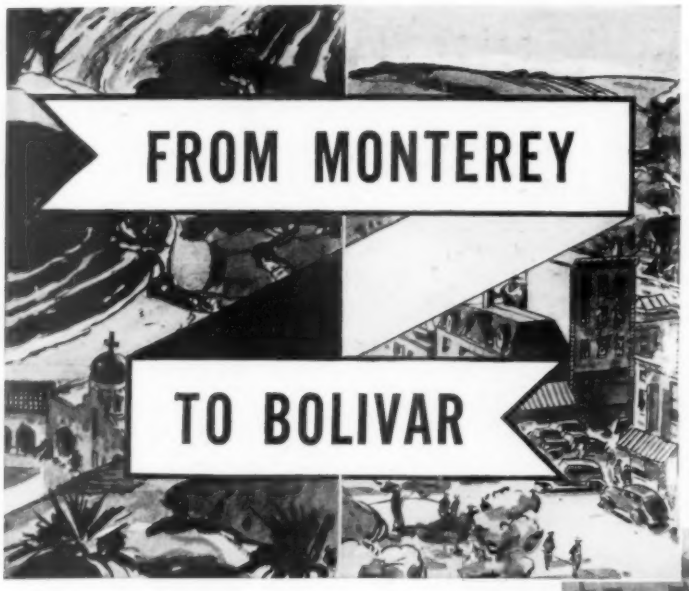
There are 530,000 such embossed plates in our office, 480,000 for realty and 50,000 for personal-property assessments. And the machines in which they are used are so flexible that they can write the information on the embossed metal plates on all the wide variety of forms that make up the work of the three departments. They can list the tax rolls, one property under another. They can print and address the tax bills in one complete operation. They can print name and address and the property description on the same horizontal line of a form, even though the sections of the plate are arranged vertically.

Not only was the tremendous volume of writing thus mechanized; the accounting operations of our offices were carefully studied, and accounting machines were included in our $171,000 expenditure.

One simple illustration shows clearly how this equipment improved our work. Formerly, the assessments, both land and buildings, were cross-added mentally, and vertically added on adding machines. Results were then copied into the tax rolls by hand, and assumed to be correct. Errors, of course, were later discovered when spreading the taxes, and detection at this late date necessitated endless adjustments and loss of time.

Opposed to the former method, the taxes are now mechan-

480,000
ASSESSMENT
PLATES



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● Though introduced but a short time ago, the A-W Patrol Sweeper has done its work so well and so economically that over fifty cities are each using one or more machines. Here are typical comments from users which explain the widespread acceptance of this speedy, efficient, low cost sweeper.

"Three months experience with Patrol Sweeper entirely satisfactory. Street cleaning cost reduced 75% and mileage increased ten times."

Mr. Samuel Ryan, Supt. of Public Works
Bolivar, New York

"Patrol Sweeper is very satisfactory . . . the answer as far as cheap sweeping is concerned. Some of our streets are up to 20% grade and the Patrol negotiates them easily."

Mr. B. J. Pardee, City Manager
Monterey, California

Designed for modern street sweeping needs, engineered for lowest initial cost, power cost and upkeep cost, the A-W Patrol makes power sweeping practical for even small communities . . . is a time and money saver anywhere.

It operates efficiently on all types of pavements, is compact, and easy to handle. Crusted dirt, unsightly debris, paper, cinders, leaves and even broken glass are rapidly whisked up. Hard-to-reach gutter areas, where dirt generally collects under modern traffic conditions, are swept thoroughly and quickly by the Patrol's "bump-proof" gutter broom.

Write today for complete facts. Make the cleanliness and beauty of your streets the talk of merchants and other citizens this spring . . . at a cost saving on street sweeping that will please tax payers.

Above: The operator for the city of Phoenix demonstrates the method of discharging the hopper load for easy removal to the city dump.

Below: At night in the business district of Ottawa, Kansas, the municipality's A-W Patrol makes a clean sweep of the day's collection of rubbish and litter.

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Motor Graders	Crushing and Screening Plants	Motor Sweepers	5-Yard Tractor-Scraper
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Rollers	Blade Graders	Bituminous Distributors	8-Yard Tractor-Scraper
Snow Plows		Elevating Graders	12-Yard Hydraulic Scraper

When you write for that catalog, kindly mention THE AMERICAN CITY.

Left—Modern addressing machines list from embossed metal plates one property under another on the tax roll, and print name, address and property description on the same horizontal line. Naturally, chances for error just don't exist. Right—The taxes are now mechanically computed and each page proved

ically computed. The assessed valuation is first printed upon the roll and at the same time mechanically multiplied by the rate to obtain the amount of the tax, and automatically printed. The cross and vertical adding and proving of the record are now performed in one operation, affording page-to-page control, which proves work to be correct before spreading the tax.

How the Million Was Saved

Actually, the saving has been $1,012,682. In the nine-year period during which the equipment has been in use, 52,541,000 tax records were produced through the addressing machines, and 92,569,000 sets of figures were extended on the bookkeeping machines.

The savings in the three departments have been as follows:

Board of Assessors	$511,907
City Treasurer	321,450
County Treasurer	179,325

When the mechanical procedure was adopted, the office of the assessors assumed the printing of all tax records, including tax bills that were formerly written by the City and County Treasurers. In nine years, this office has printed 29,220,000 tax bills for the city and county, and has printed 3,120,000 tax records made necessary by new tax legislation.

A minimum estimate of the overtime work in the assessors' office that has been eliminated by our modern equipment is $18,000 yearly. The salary saving has amounted to $35,000 a year. These savings are in addition to savings in the cost of tax bills, and doing the tremendous volume of additional work required.

Our equipment has enabled us to do with accuracy and promptness a number of special jobs made necessary by specific legislation or by emergencies arising because of the depression. For example, when the State Legislature declared a tax moratorium and amortization plan, the County Treasurer needed three complete tax records to set up a system for collecting delinquent taxes over a ten-year period. This meant that the entire list of 480,000 property descriptions, with owners' names, had to be written three times. To us, it meant that we simply ran the 480,000 metal plates through our addressing machines three times, listing the information on them on records for use of the Treasurer.

When the city of Detroit announced its seven-year plan for cleaning up delinquencies, another complete transcription of the 480,000 metal plates was required. To the addressing machines, it was just a routine task. If we had not had mechanical equipment, however, it would have meant endless days and nights of overtime work with temporary and, consequently, inexperienced help.

When the tax sale was held by the state, the city again required a duplicate record of the properties, so that it could protect its interest in all property.

During these nine years, a duplicate set of the records was made for the Auditor General's Office. There have been many miscellaneous listings of the property required. For example, lists have been made for special assessments and for tax-collection campaigns and for particular research activities.

World-Wide Publicity

Literally thousands of visitors from this and foreign countries have come to Detroit to study our procedure and to inspect the equipment which does our work. We have had delegations from Russia, England, Scotland, Norway, the Philippines, Belgium, Mexico, South America, Hawaii and China, and also many of our Canadian neighbors.

Although we do not claim that we have been pioneers in modernizing tax methods, we have had a great deal of influence on the methods now used by other cities. For example, Allegheny County, Pa., Wayne County, Mich., Cleveland, Providence, Newark, Louisville, and many other cities have studied our methods and have since installed modern tax equipment and adopted modern procedure.

So extensive has been the interest of tax-assessing bodies of all kinds in improving their methods, that members of our Board have continually been called upon to write articles for magazines, to make speeches at conventions on tax-assessing, and to send samples of our forms throughout the world.

Mechanization Essential

I cannot over-emphasize the importance of mechanical office equipment in governmental offices. Not only does it effect direct economies and insure the production of accurate records, but it affords a saving to the taxpayers individually and collectively through prompt delivery of tax statements and notices, and prompt collection of taxes.

Our investment of $171,000, made in 1929, has certainly been proved sound. For nine years we have used our equipment constantly, and we are still using it. Of course, some of it is becoming worn and will eventually have to be replaced. And, when the time comes, we shall certainly replace it. But more important even than the savings is the fact that without modern equipment and mechanized procedure it would be impossible to do the tremendous amount of the detail work now required in our offices. To even think of going back to former methods is enough to "give us the jitters."

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TAXPAYERS VOTE "YES!" with enthusiasm! Hundreds of actual letters in our files say so! Permutit softened water is wonderful for bathing, shaving. Speeds up washing, cleaning. And saves every home real money . . . in soap, fuel, clothing and plumbing repair bills!

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Yes, over 400 municipalities in the United States have Permutit Water Conditioning. An impressive testimonial to the value of soft, iron-free water.

Such equipment costs money, of course. Yet many city governments have independently decided "It's certainly worth it!"

Why? Here's your answer in a nutshell. Permutit water conditioning is one municipal improvement that benefits every home, every business; gives savings and satisfaction to every taxpayer.

Bring your water conditioning problems to Permutit —the world's largest water consultants. Our laboratories will make water analyses, our experts will consult with your engineers . . . and it won't cost you a red cent. Interesting booklets on municipal water conditioning are yours for the asking. Address The Permutit Company, Dept. G3, 330 West 42nd Street, New York.

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The Water Conditioning Headquarters

over 25 years

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A Complete Supervisory Watch Desk at Fire Headquarters Shows What's Doing on Switchboard at Fire-Alarm Headquarters

By HENRY P. BUCHHOLZ
Fire Department, Millburn, N. J.

THE township of Millburn has been given the maximum rating for its new Horni automatic Class B fire-alarm system, even though there is no operator at the new fire-alarm headquarters as required by the regulation that "there shall be at least one fire-alarm operator on duty at all times in fire-alarm headquarters." This requirement has been met by the installation of a watch desk in fire headquarters, where a man is constantly on duty.

The watch desk is equipped with meters and other "tell-tale" devices, including visible and audible trouble indications which show the condition of circuits at the main switchboard at all times. The main switchboard, together with storage batteries and other equipment, is installed in a detached, one-story fireproofed building immediately in the rear of fire headquarters.

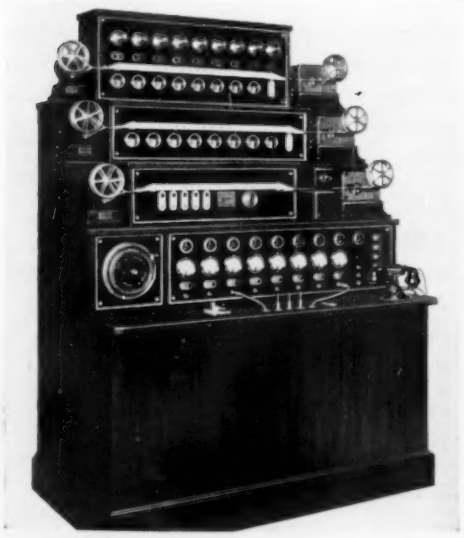
The operator at the watch desk receives all telephone and verbal alarms and, by means of a four-digit transmitter mounted in the cabinet, transmits correct signal numbers through the various circuits. A telegraph key is also provided for use in transmitting routine and special signals.

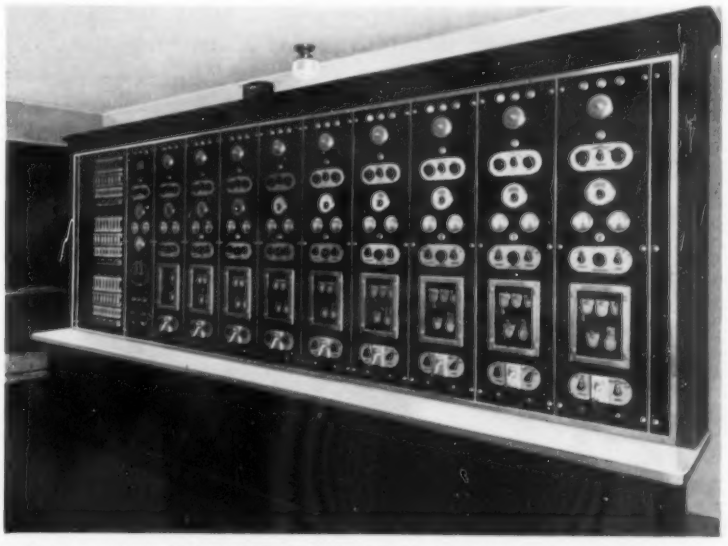
The cost of the watch desk was $5,000, but without it there would have to be an addition to personnel at a cost of not less than $4,000 per year and, should the three-platoon system be adopted, $6,000 per year.

Normal operation of the system is from the watch desk, mounted in a furniture-steel cabinet which carries recording facilities for all signals over normal metallic circuits and also for signals received by means of the Compositrol system, which is a combination of metallic and emergency ground circuit. Signals received over the Compositrol system are manually re-transmitted over the entire system in the same manner as telephone alarms, in this way excluding the re-transmission of any false signals caused by line troubles.

The main switchboard is of the unit-panel type and can readily be adapted to Class "A" requirements for full manual or semi-automatic operation. It is mounted in an expandible cabinet made of furniture steel, finished in hand-grained mahogany, and provides for eight box circuits, and one alarm circuit which operates dual Pena-Tone air horns and a local circuit. Each of these circuits is provided with an individual combination high- and low-charge rectifier unit mounted in the lower part of the cabinet.

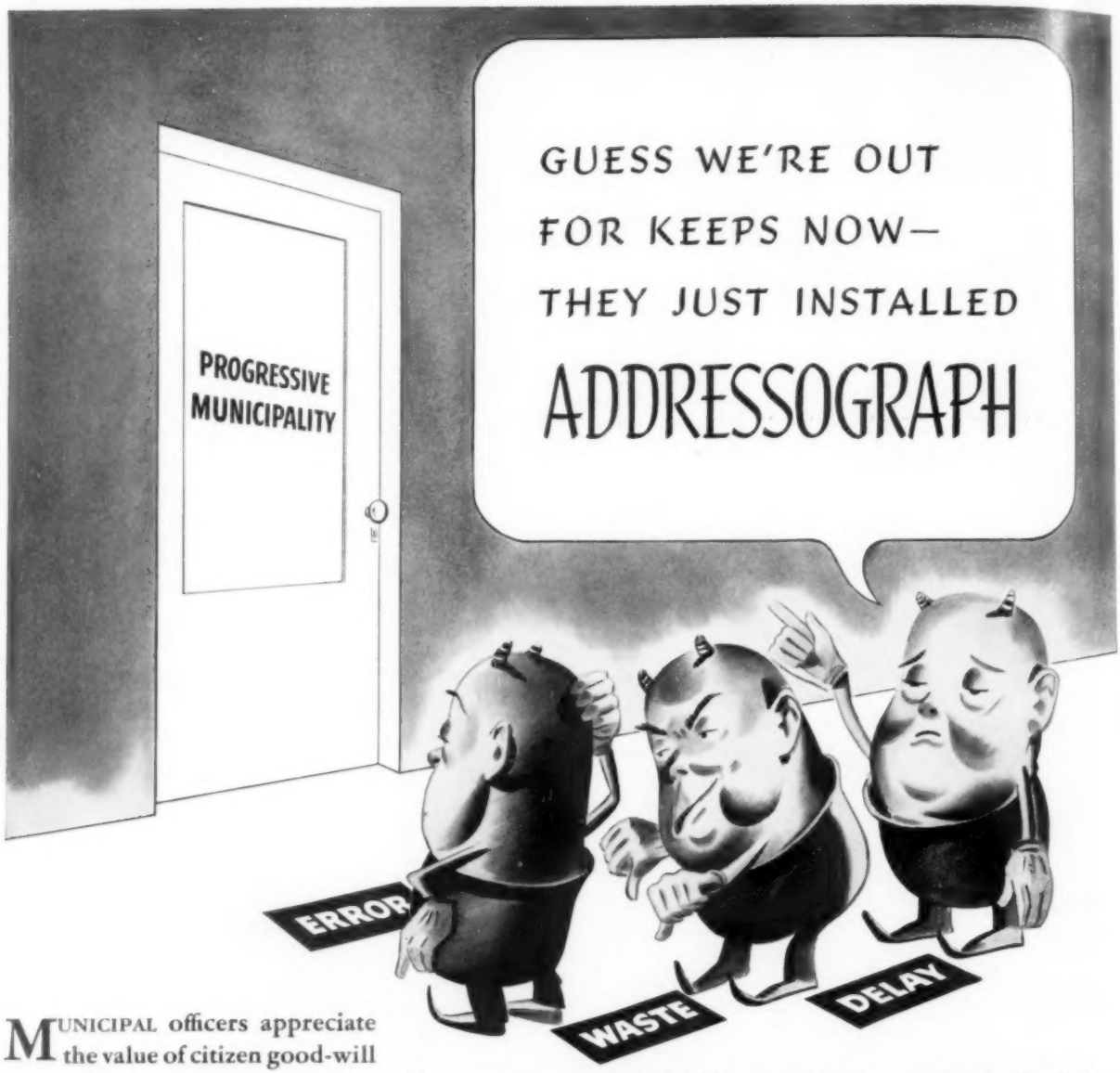
The system also includes Audiplex equipment, which provides full telephone facilities and, equipped with Western Electric amplifiers and loud-speakers, may also be used as an announcing system.





DEADFRONT WATCH DESK AND SWITCHBOARD OF MODERN FIRE-ALARM SYSTEM DISTRIBUTED BY GRAYBAR ELECTRIC CO.

Pilot lights flash the number of the signaling box on all panels, and bells ring code. An annunciator lamp indicates circuit in which signal originated. The same indications are given at the watch desk, shown at the left, and simultaneously the dual air horns sound the public alarm. Lower register and time stamp record on tape all signals over normal metallic circuits. Signals through ground circuits are recorded on two upper registers. The monophone hand set can be plugged in for telephone conversation over any circuit



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PLAN TO VISIT THE ADDRESSOGRAPH-MULTIGRAPH EXHIBITS AT NEW YORK WORLD'S FAIR AND GOLDEN GATE INTERNATIONAL EXPOSITION

By means of the Audiplex system, any member of the Department may telephone from any fire-alarm box into headquarters, where his signal call is reproduced by a loud-speaker attracting the attention not only of the man on duty but of anyone else within hearing. The person calling can be connected directly to a special telephone on the chief's desk or, if desired, can be connected to make a general announcement over loud-speakers throughout fire headquarters.

The volunteer members of the Department are summoned by means of the air horns mounted on a tower immediately adjacent to the fire-alarm building. An automatically operated electric-driven air compressor maintains proper pressure in three oversize steel storage tanks, the insides of which are coated to prevent rust accumulation. Brass pipe and fittings are used exclusively throughout the entire installation.

An automatically started, emergency electric generator set of 1½-kw capacity, driven by an illuminating-gas-operated engine, can furnish alternating current for the fire-alarm system, for building lights and police-radio, in case of failure in the power supply.

Batteries are of the sealed-in type having large capacity, and have been especially designed and constructed for operation under trickle-charge conditions, insuring long life.

Millburn Township is divided into seven zones, and all boxes are coded, using four numbers for each. All undeveloped property has been numbered. As new streets are cut through, fire-alarm box numbers follow in rotation. At present there are fire-alarm boxes in all seven zones, and circuit wires are being run to new residential developments in all sections.

Factory construction, installation and final testing of all the equipment used in this system were under the direct personal supervision of J. David Hayes, Chief of the Fire Department, and Captain Harold Bond, Superintendent of the Fire-Alarm System.

Tax-Delinquent and Other Lands Donated to County Park System

By W. RICHMOND TRACY
Engineer and Secretary, The Union County Park Commission, Elizabeth, N. J.

LAND acquirement by purchase in the Park System of Union County, New Jersey, has been virtually at a standstill during the past eight years; however, in that time more than 100 acres of land to be devoted to park and recreational purposes have been added to the total county park acreage by donations from individuals, corporations, and municipalities. Of these donations, the gifts to the Park Commission by municipalities are worthy of the attention of public officials in other counties where park systems exist or are contemplated. The municipal gifts have, to a large extent, included tax-delinquent properties which were a burden to the community at large.

As the result of these donations of recent years, Union County residents are able to view with satisfaction the development of Milton Lake Park in Rahway, a 50-acre tract which will soon be ready for the intensive use of thousands of residents; and the development of a 14-acre area along the West Branch of the Elizabeth River in Union Township, where rapid progress is being made in converting worthless low lands into usable park lands.

How Municipal Officials Helped

To make possible the development of Milton Lake, city officials of Rahway busied themselves in securing donations of small tracts from individual property owners to complement a municipally-owned area which the Common Council had already agreed to give to the Park Commission.

In one instance, the city obtained the donation of approximately half of a 19-acre tract of land, in lieu of waiving back taxes on the entire tract. The holder of the mortgage on this land consented to have the mortgage applied on the land retained by the private owner, after the transfer to the city was made. It was comparatively easy to convince the mortgage-holder that his investment was more secure on a smaller tract on which the building of houses could begin immediately, than on a larger tract of land which was tax-delinquent and on which no building of any sort could be erected until the city's claim for taxes was satisfied.

The procedure followed in Union Township was somewhat different from that in Rahway. A friendly condemnation suit was instituted for land desired by the Park Commission, all of which land was tax-delinquent. When the award was made by the condemnation commissioners, the amount awarded to the owners was less than the amount of taxes due; the taxes were waived by the township; and the Park Commission acquired a clear title.

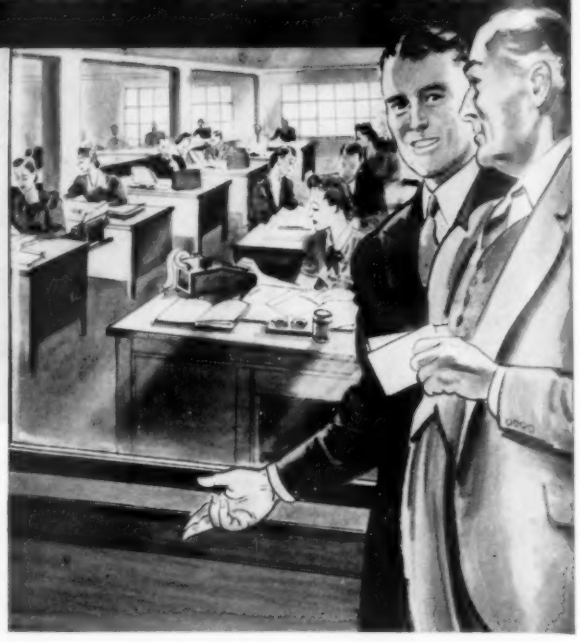
Aid from WPA

In each of the instances cited above, approval of Works Progress Administration projects had been secured prior to the actual acquisition of the land to be improved. Consequently, only a short time elapsed after title in the properties was vested in the Park Commission until actual development work started. To date $168,824.50 has been allocated by the WPA for the Milton Lake development in Rahway, and $78,291.50 for landscaping and constructing recreational areas along the West Branch of the Elizabeth River in Union Township.

Briefly, the transformation of swampy and other undesirable land in Milton Lake Park into an area of beauty and utility includes the development of a lake, with ma-

"WE MET AN HOURS PROBLEM in this office BY ELIMINATING NEEDLESS OPERATIONS"

Many public officials find that the most effective way to meet an hours problem is to determine which employees are handicapped by operations that can be shortened or eliminated. Here are a few typical examples with which to start a desk-to-desk study in your office.



Are Your Typists Obliged to Do Several Jobs Separately that Might Be Combined?

Continuous multiple-copy forms used with improved equipment save needless copying, carbon handling and joggling of forms.

•

Do You Lose Time in Obtaining Statistics as a Separate Operation?

Statistical information may often be obtained as a by-product of some other necessary operation. For example, obtaining analysis of expenses as a by-product of the trial balance of the expense classification ledger.

•

Are You Losing Time and Accuracy by Needlessly Relisting Figures?

Time can be saved and errors eliminated on many jobs by the use of two-total adding or calculating machines that complete the work in one run through the media, ledgers, cash books, journals, etc.

Does Your Present Procedure Give Results Desired Without Wasteful Operations?

If unproductive intermediate steps are required to fit the work to your present machines or system, it will pay you to investigate "direct-to-final-results" methods.

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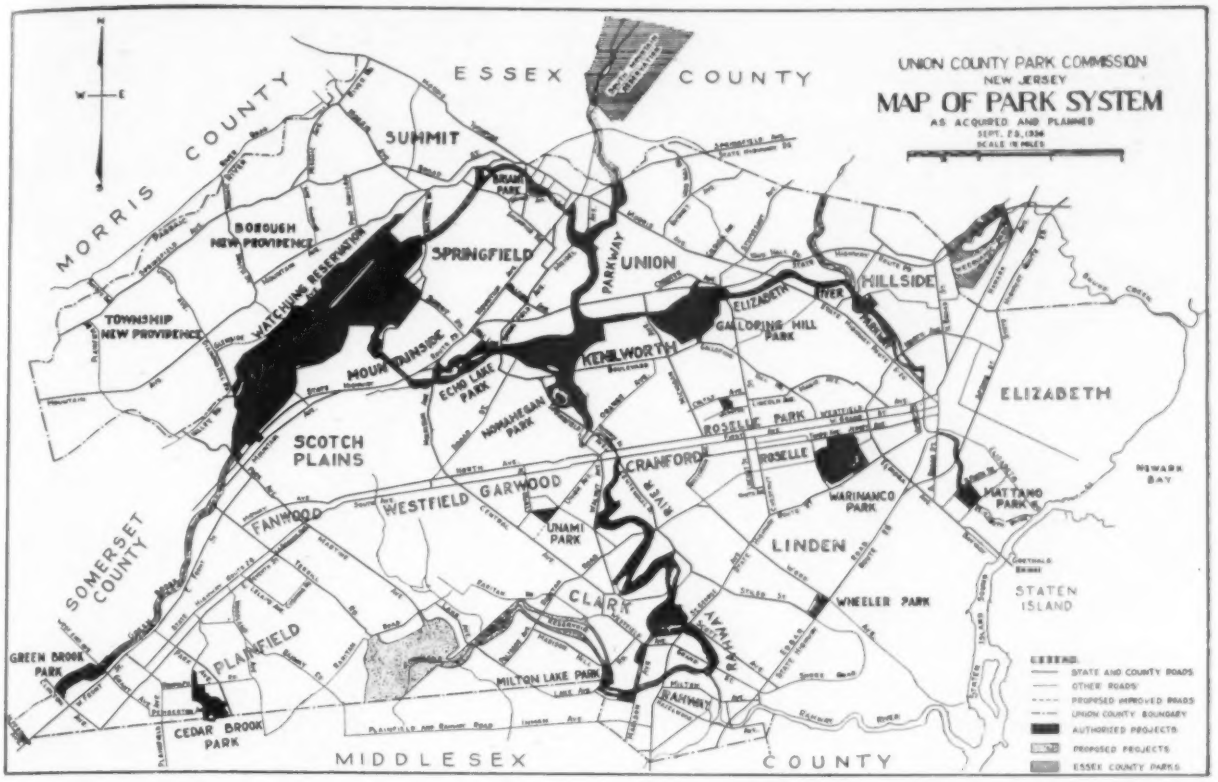


sonry dam; play areas and a children's playground; picnic spots with tables, benches, fireplaces, and a picnic shelter; a skating shelter near the lake; softball and other athletic fields; a pavilion; and the general development and landscaping of the entire area, including installation of a drainage system, river channel improvement, planting of trees and shrubs, and extensive seeding.

Along the West Branch of the Elizabeth River construction work, now under way, will eventually include the development of a playground, a baseball field, tennis courts, other recreational features, a field house, and much planting of trees and shrubs in addition to lawn seeding. A drive will be surfaced as part of the future Elizabeth River Parkway, and this drive will provide easy access to the recreational facilities to be developed.

The Idea Spreads

The fact that the Common Council or another municipality in the county has already voted to begin acquirement of tax-delinquent and other land to be given the Park Commission, and that the township committee of still another municipality is investigating what it can do along these lines, is perhaps the best indication that the donation of such lands to the Park Commission offers one of the best uses to which such areas may be put.

The record floods of last summer have awakened considerable public interest in the general subject of flood control and particularly along the Elizabeth River Parkway, indicated on the accompanying map, in which unit much of the land remains to be acquired. We are receiving the assistance of various municipalities in connection with their taking over tax-delinquent lands included in this project and turning them over to the Commission.

Owing to recent economic conditions, this Commission has been without capital funds for the acquisition of the remaining 10 per cent of the park area indicated on the map, and as there are considerable tracts of tax-delinquent lands, we expect to pick up a substantial portion of the area in this particular parkway by the above-mentioned method.

It is of course imperative to obtain the necessary land, especially near the main streams subject to possible flooding at times of high water, before buildings are erected. We were able to acquire most of the land along the Rahway River previous to 1930 without many buildings. Further delay along the Elizabeth River would of course greatly increase the cost of acquisition.

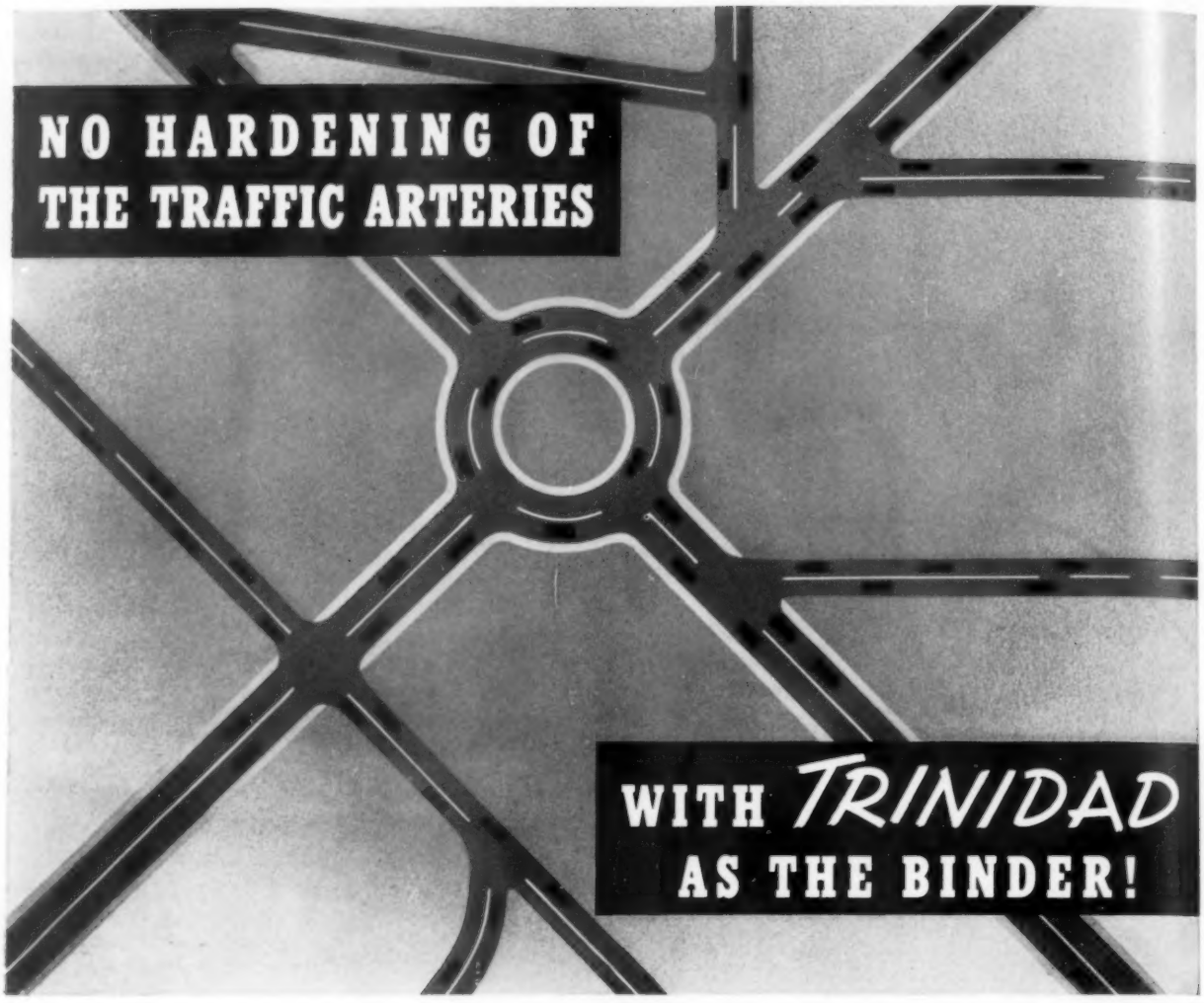
Steel Penstock and New Hydro for City Plant

CONTRACTS have been let for the construction of a 24-inch high-pressure steel penstock and one 2,500-kw hydroelectric generating unit to serve Colorado Springs. The new unit will be located in the Manitou Springs plant, Colo.

The penstock, 15,647 feet long and averaging 22 9/16 inside diameter, begins at a point near the Cabin Creek Crossing of the city's present water-supply line, elevation 8,583 feet, and extends 2.33 miles to the power-house. It is in two divisions, one 1.39 miles long with a fall of 261 feet, and the other 0.94-mile long with a fall of 1,971 feet. Steel pipe for the project is being furnished by Taylor Forge & Pipe Works, the joints on the longer section of the line being made with 482 Dresser couplings.

Also interested in the project are B. B. McReynolds, Water Superintendent, F. H. Wiley, Electrical Superintendent, and F. O. Ray, City Engineer. Work is being completed under PWA.

E. L. MOSLEY,
City Manager, Colorado Springs, Colo.



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In addition, Trinidad Native Lake Asphalt contains a mineral filler colloidally dispersed in a manner not yet duplicated commercially in any other asphalt. This filler definitely tends to stabilize the pavement and prolong its life.

Highway engineers interested in low-cost-per-square-yard-per-year paving are invited to correspond with Barber and learn more about Trinidad Native Lake Asphalt. Clip and mail the coupon below, pinned to your letterhead, checking the Barber Asphalt Paving Products in which you are most interested.

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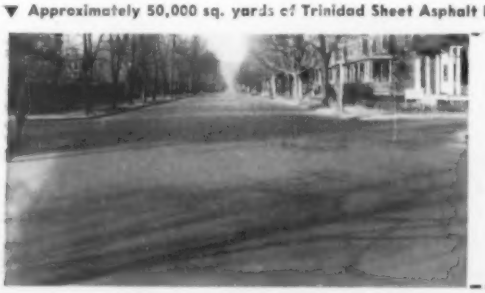

BARBER ASPHALT CORP., Dept. AC-10, Barber, N. J.

Please send me complete information about the Barber Products checked below.

- ☐ TRINIDAD LAKE ASPHALT — For hot mix, for cold-lay sheet asphalt and asphaltic concrete pavements.
- ☐ BARBER EMULSIFIED ASPHALTS — Used cold for penetration, pre-mix, road mix (mixed in place) and surface treatment work.
- ☐ GENASCO CRACK FILLER — For maintenance of concrete roads.
- ☐ BARBER BRAND LIQUID ASPHALTS — For cold surface treatment—for hot surface treatment.
- ☐ BARBER BRAND WINTER COLD PATCH — A cut-back asphalt for use in patching and maintenance work in cold weather.
- ☐ GENASCO BLOCK AND JOINT FILLER — For brick, granite block and concrete highways.

Subaqueous Pipe Line Serving Hancock, Michigan

Steel Pipe Laid in Trench and Coupled Under Water by Diver

TO furnish an adequate supply of water to the city of Hancock, located on a peninsula, the Copper Range Co., of Painesdale, Mich., laid a single 12-inch subaqueous line across Portage Lake from West Houghton to West Hancock for a total distance of 1,320 feet. The steel pipe, furnished in 22-foot lengths by the Youngstown Sheet & Tube Co., carries an average pressure of 265 pounds and was connected up under water by Paul J. Flynn, of Duluth, Minn., using Dresser couplings.

Preparation

A trench of sufficient depth to get the line below the grade set by the U. S. War Department was dredged in the lake bottom by a clamshell derrick scow, through silt, mud, gravel, sand clay and boulders. The trench had a maximum depth of 15 feet and a minimum depth of 1 foot and was 4 feet wide on the bottom. Work was started on this job September 1, 1937, and completed October 2, 1937. Three 20-foot sections of pipe connected by Dresser joints with a harness were slacked down a ramp from a skidway on the lake shore and floated to a compressed-air station where a pressure of 80 pounds was put on each three-pipe section. The joints were inspected for leaks, by bubbles and an air-gage test, and then the pipe was towed to a derrick scow for lowering.

The derrick and diving scow was specially rigged for pipe-line work with one 40-foot length of 12-inch pipe used for a bridle beam, and below this the three 20-foot pipe sections were floated and slung to the bridle beam by three 1½-inch manilla slings. A strain was taken by the hoist while testing the bulkhead end. Then the pipe end to be connected to the line under water was removed and the outer bulkhead left on the pipe for the test when the section was connected up on the bottom of the lake.

Three mudsills for each 20-foot pipe were U-bolted to the pipe before launching at the lower end of the ramp. These mudsills consisted of 4 x 12-inch x 5-foot planking, which allowed the pipe to sink about one-half its diameter in the lake bottom. After the pipe was lowered to within 1 foot of the lake bottom by the derrick, the diver took off the pipe fittings and the 2-inch pressure hose from the bulkhead on the previous pipe and then removed the bulkhead, sending it to the surface to be used on the next pipe.

The flanges, gaskets and sleeves of the Dresser couplings were placed on the pipe ends by the diver, and the pipe was connected and bolted up loose. Then the harness bolts were run up and about a 50-pound strain taken up on them. The coupling flange bolts were set to an 80-pound pull, using a Dresser ratchet and torque wrench, and each nut that was locked was checked twice. The mudsills were checked to see whether they fitted the irregular muck bottom of the lake, and if necessary the U-bolts were slacked and the sills rolled to fit the bottom and then the U-bolts tightened. The pipe was then set to line and slacked about 1 foot to the lake bottom. A cable stretched across the lake and resting on the bottom was used to line up the pipe. The diver was allowed 2 inches off line and no more.

END VIEW OF THE PIPE-LAYING SCOW, SHOWING THE BRIDLE BEAM AND RIGGING USED TO LOWER THE SECTION OF THREE 20-FOOT PIPES

Testing

The slings were removed and sent to the surface with the bridle beam for use with the next pipe. A 2-inch pressure hose was connected to the bottom of the pipe at the outer end on the test bulkhead and the loose end of the hose sent to the surface. A globe valve was fitted to both the top and bottom ends of the hose. All the harness bolts were then slacked exactly ⅜-inch to allow for pipe settlement, if any, in the muck bottom. Thirty sand-filled cement sacks were placed on the pipe to prevent its floating after the water was blown out of the pipe and the air test put on. This completed the diver's work for each section of three 20-foot pipe. All the diving was done by one man by touch, as visibility was zero in the 45 to 50 feet of water.

The upper valve on the pressure hose was opened and the pipe line blown empty of water. Then, after closing the valve, an 80-pound air pressure was put on the line. In addition to watching the air-gage, the line was patrolled and a watch kept for air bubbles. Not one leaking joint was found.

After the line was completed and the large concrete anchors poured holding the shore ends of the line, a 310-pound air pressure was put on and the test proved satisfactory as the gage held up and no bubbles were detected.

This work was engineered in the field by B. Manderfield, Chief Engineer, Copper Range Co., Painesdale, Mich., and Chester Gibbs, City Engineer, Houghton, Mich.

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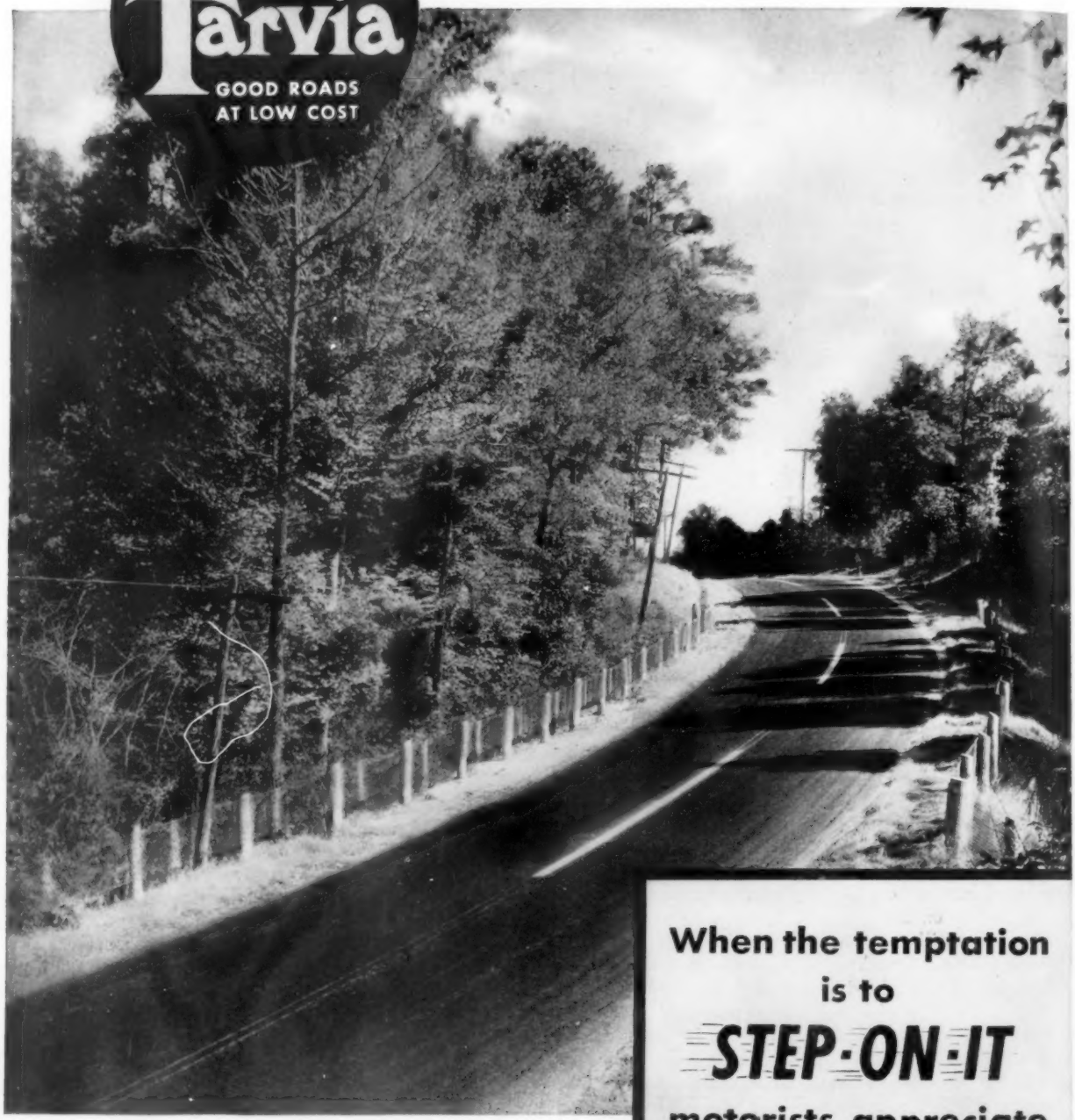

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Water Rates and Service Charges

1939—Part II

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

York, Nebr.

Present population	5,712
Population served	5,400
Number of active services	1,420
" " meters	1,515
" " hydrants	127
Miles of water main	15

The minimum monthly bill for metered services in York is $1.00 and the meter rates are:

First	500 cu. ft.	$ .26 per	100 cu. ft.
Next	3,000 " "	20 "	" "
"	4,500 " "	14 "	" "
"	10,000 " "	10 "	" "
"	12,000 " "	08 "	" "
Excess		06 "	" "

The York Water Co. owns and maintains, repairs and adjusts all meters except when damaged through extreme heat or cold or accident. No charge is made for the tapping of the main for the installation of a new water service.

The company owns and maintains all hydrants and makes the following charges, which are payable monthly:

First 123 hydrants	$35 00 per year each
All in excess	25 00 " " "

E. L. Malster,
Manager, York Water Company.

Baraboo, Wis.

Present population	6,000
Population served	5,500
Number of active services	2,010
" " meters	1,850
" " hydrants	208
Miles of water main	23 5

The water rates for Baraboo are divided into flat rates and meter rates. The meter rates for general service are:

		Per 100 Cu. Ft.
First	6,670 cu. ft. used per quarter	$ .11¼ net
Next	13,334 " " " "	.09 "
"	13,334 " " " "	.07½ "
"	20,000 " " " "	.06 "
Over	53,337 " " " "	.04½ "

The service charges payable quarterly and depending on the size of the meter are:

⅝"	meter	$ .25 per quarter
¾"	"	.33 " "
1"	"	.50 " "
1½"	"	.67 " "
2"	"	1.17 " "
3"	"	2.00 " "
4"	"	3.33 " "
6"	"	6.67 " "

Upon application for water service, the Water Commission makes the tap and the connection between the water main up to and including the curb stop. This is paid for by the property owner, based on a cost figured from the center of the street regardless of the location of the main. This part of the service becomes the property of the Water Commission upon completion and is maintained by the Department thereafter. The service from the curb stop to the meter setting is made by a licensed plumber, paid by the owner of the property, and is maintained by him. Meters are furnished and maintained by the Commission. This cost is covered by the service charges.

Public fire hydrants are billed to the city at $30 each per year. There is no specific charge for fire connections for sprinkler service.

Leland Shaw,
Superintendent, Water Works Commission.

Shenandoah, Iowa

Present population	6,502
Population served	5,500
Number of active services	1,600
" " meters	1,550
" " hydrants	164
Miles of water main	21 02

The minimum charge for water per month in Shenandoah is 60c, and the sliding scale of rates is as follows:

First	3,000 cu. ft. per month	$ .25 per	100 cu. ft.
Next	3,000 " " "	.21 "	" "
"	" " "	.19 "	" "
"	6,000 " " "	.18 "	" "
"	7,000 " " "	.16 "	" "
"	12,000 " " "	.15 "	" "
"	22,000 " " "	.14 "	" "
"	34,000 " " "	.1225 "	" "
All over	90,000 cu. ft. per month	.1125 "	" "

The meters are read monthly, and customers are billed quarterly, the city being divided into three districts for billing purposes, one-third of the town receiving water statements each month. The bills are delinquent if not paid within the month in which they are sent out. There is no penalty or discount on the bills.

All service pipe from the main to the point of consumption is the property of the consumer and is installed by any licensed plumber who is permitted to make the tap in the city main. All meters are owned by the city and are kept in repair and installed by the city without charge to the consumer.

There is no rental charge for fire hydrants, and no charge is made for fire sprinkler systems.

F. L. Cain,
Superintendent, Water Department.

Asheboro, N. C.

Present population	8,000
Population served	8,500
Number of active services	1,400
" " meters	1,400
" " hydrants	152
Miles of water main	28 0

The minimum monthly rate to any consumer of water within the corporate limits of the city of Asheboro is $1.00 for 2,000 gals. of water or less. All consumers within the corporate limits using more than 2,000 gals. of water per month through any one meter are charged as follows:

Add to minimum excess used above		
2,000 to 10,000 gals.	$ .45 per	1,000 gals.
10,000 to 50,000 "	.40 "	" "
50,000 to 100,000 "	.35 "	" "
100,000 to 200,000 "	.30 "	" "
200,000 and up	.25 "	" "

Where the meter does not belong to the property, a monthly rental charge is made as follows: ⅝" to 1 "meter, 25c; 1¼" to 2" meter, 50c. The rates for water to consumers outside the city limits is 25% more than the rates within the city, and for combined water and sewer service the rate is 50% greater than the rates above.

All services are metered, and if for any reason the meter fails to register, the bill is determined by taking the average of the water consumption during the three months next preceding the month in which the meter has failed to register. Meters are tested by the Water Department upon the request of the consumer and the payment in advance of a testing fee of $1.00.

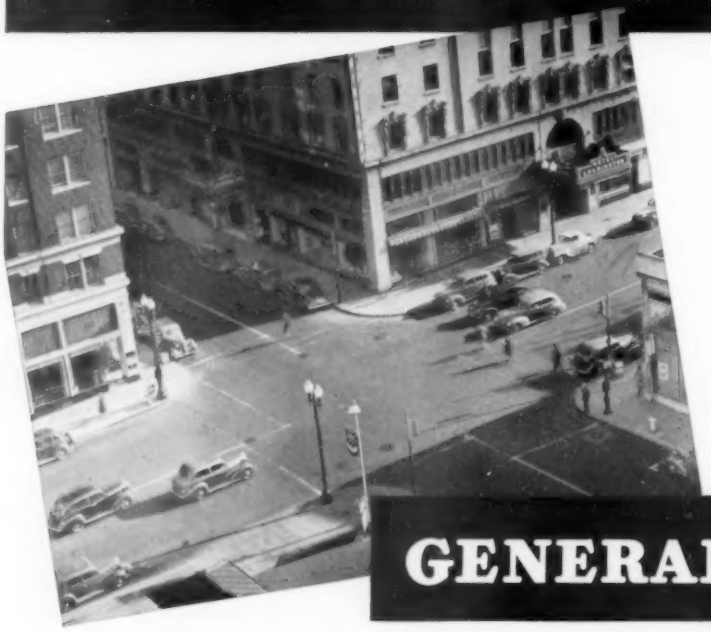
Applications for permission to make water connections are made at the office of the Water Department and are authorized upon the payment of the required tapping fees, which are as follows, covering tapping the main and making connections, including the meter box, but without the meter inside the city limits:

For ¾" pipe connection and service	$15 00
" 1" " " "	20 00
" 1½" " " "	35 00
" 2" " " "	45 00

For cutting and patching paved streets, an additional charge of $5.00 per square yard is made.

The connection between the water main and the meter within the curb line, including the meter, is made by the city plumber or under his direction, and the costs of the work, including material and meter, are paid by the applicant for the connection. The owner, however, may

TRAFFIC REGULATION Is Easier in Oakland with Type D Traffic-signal Controllers



TRAFFIC control in Oakland, Calif., has been much less of a problem since the installation of 30 G-E Type D traffic-signal controllers. Ready adaptability for all types of intersections, easy adjustment of timing and color sequence, and reliable operation with low maintenance have made the Type D controllers worth far more than their purchase price. You obtain these important advantages when you install Type D traffic-signal controllers, and the controllers can easily be adapted to meet future needs. The substantial discount offered to municipalities brings the G-E Type D traffic-signal controller within the limits of moderate budgets. For further information write to the nearest G-E sales office or to General Electric Company, Schenectady, N. Y.

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GENERAL ELECTRIC

500-350

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If you are interested in reducing night traffic accidents we urge that you write at once for complete information on PRISMO-treated Road Striping and on Highway Signs (Prismo-processed) and on PRISMO PERMI-BASE (illustrated below) or PRISMO FIBREGLAS for marking obstructions, posts, abutments and temporary hazards.

If you have not seen PRISMO demonstrations at the Road Show or in actual use on highways you will be interested in knowing that the PRISMO PROCESS includes the introduction of thousands of microscopic glass spheres into a special, semi-plastic paint. These tiny spheres return light to its source so that a road stripe, marker or sign glows intensely.

Prismo Safety Corporation
Division of John R. Wald Co.
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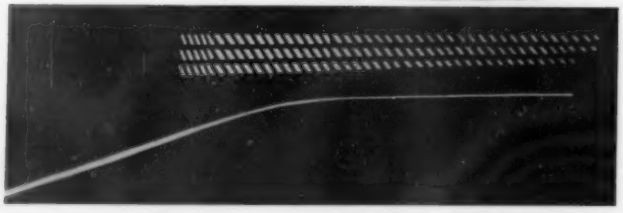

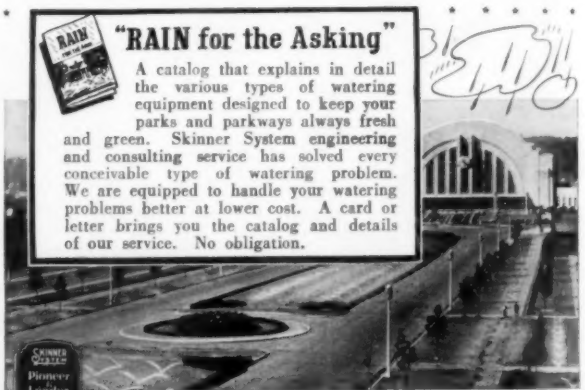

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buy or rent a meter 2″ or less, but all meters over 2″ must be paid for by the owner. The piping and connections beyond the meter, or meter connections, including that within the meter box, must be kept in repair by the owner of the premises.

All water bills are due on the 1st of the month, and the owner and occupant are held jointly and severally liable for payment. If a bill is unpaid on the 15th, the water is shut off and a fee of $1.00, in addition to the amount of the charges, must be paid before the water is turned on again. A consumer may temporarily discontinue the use of water by giving notice in writing to the Water Department. The fee for turning on again is 50c. If the owner or consumer fails to give such notice, the minimum monthly rate is charged unless the meter shows consumption of water above the minimum. Where water is cut off and service discontinued for violation of the Water Department regulations, a charge of $1.00 is made before the water is turned on.

There are no hydrant rentals charged the city, and fire sprinkler services carry no charge beyond the meter rate for water used. Outside the corporate limits of the city a flat rate of $8 quarterly in advance is charged for each 10,000 sq. ft. of floor space or fraction thereof protected by an automatic sprinkler system connected to the city main.

W. E. YAW,
Water Superintendent.

Borough of Media, Pa.

Present population	4,996
Population served	11,000
Number of active services	2,250
" " meters	715
" " hydrants	155
Miles of water main	44

In addition to supplying consumers within the borough, the water works furnishes water service in the townships of Middletown, Upper Providence and Nether Providence in Delaware County, Pa. The rates within the borough and outside vary considerably. The consumption charges for water delivered *within* the borough are:

First	10,000 gals.	$3.00	minimum rate
Next	15,000 "	.30	per 1,000 gals.
"	25,000 "	.25	" " "
"	25,000 "	.20	" " "
"	50,000 "	.17½	" " "
"	125,000 "	.15	" " "
All in excess of 250,000 gals.		.12	" " "

When the bill is not paid within 30 days an additional charge of 5% is made.

A fixed service charge is made to each consumer for each meter, based upon the relative capacity of the meter, as follows:

⅝″ meter or less	$ 1.00	per quarter
¾″ "	1.50	" "
1″ "	2.00	" "
1½″ "	4.00	" "
2″ "	7.50	" "
3″ "	15.00	" "
4″ "	25.00	" "

Upon written application for water service, the borough makes the tap and then the consumer has the service installed from the main to the property at his expense.

The quarterly rates, together with the minimum charges for various sizes of meters installed on services *outside* the borough, are as follows:

⅝″ METER

Minimum charge $5.50 for 10,000-gal. allowance

Next	15,000 gals.	$ .45	per 1,000 gals.
"	25,000 "	.37½	" " "
"	25,000 "	.30	" " "
"	50,000 "	.26¼	" " "
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

¾″ METER

Minimum charge $6.00 for 10,000-gal. allowance

Next	15,000 gals.	$ .45	per 1,000 gals.
"	25,000 "	.37½	" " "
"	25,000 "	.30	" " "
"	50,000 "	.26¼	" " "
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

1″ METER

Minimum charge $6.50 for 10,000-gal. allowance

Next	15,000 gals.	$ .45	per 1,000 gals.
"	25,000 "	.37½	" " "
"	25,000 "	.30	" " "
"	50,000 "	.26¼	" " "
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

1½″ METER

Minimum charge $10.75 for 15,000-gal. allowance

Next	10,000 gals.	$ .45	per 1,000 gals.
"	25,000 "	.37½	" " "
"	25,000 "	.30	" " "
"	50,000 "	.26¼	" " "
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

2″ METER

Minimum charge $18.75 for 25,000-gal. allowance

Next	25,000 gals.	$ .37½	per 1,000 gals.
"	25,000 "	.30	" " "
"	50,000 "	.26¼	" " "
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

3″ METER

Minimum charge $35.60 for 50,000-gal. allowance

Next	25,000 gals.	$ .30	per 1,000 gals.
"	50,000 "	.26¼	" " "
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

4″ METER

Minimum charge $59.66 for 100,000-gal. allowance

Next	25,000 gals.	$ .26¼	per 1,000 gals.
"	125,000 "	.22½	" " "
All in excess of above		.18	" " "

No charges are made for hydrants for fire fighting, either public or private, nor for connections to automatic sprinkler systems for fire protection.

An annual charge for the disposal of sewage is made payable in advance on the first Monday of January in each year. Each property owner pays a sum equal to 40% of the water rent charged against the property on the previous January 1; or where water is paid for by meter, 40% of the previous year's water bill. A discount of 5% is allowed on sewer bills paid before the first day of February, or 3% if paid between the first of February and the first of March.

H. B. JOHNSON,
Water Superintendent.

Millville, N. J.

Present population	14,705
Population served	12,000
Number of active services	2,982
" " meters	8
" " hydrants	191
Miles of water main	4.15

While most of the services in Millville are on a flat rate, there is a meter rate of 20c per 1,000 gals. In the rural districts the minimum annual charge for metered services is $20. If a bill is paid on or before the 15th of the month of issue, a 10% discount is allowed.

Applicants for service must sign a standard water service contract with the Millville Water Co., requiring a minimum charge of $5.00 per year for one outlet per service inside the city.

The water company installs the service pipe from the main to the building line free of charge. Excessive lengths to a building line are charged according to the distance, time and material. Consumers install the service from the building line to connect with the house system.

There is a charge for fire hydrants for public fire service of $12.50 each per year, with no discount. Small installations of sprinkler heads for fire protection are charged $25 per year less the 10% for prompt payment. There are no large installations in Millville.

H. H. MELVIN,
General Manager, The Millville Water Co.

Madison, Wis.

Present population	68,500
Population served	70,000
Number of active services	14,500
" " meters	15,000
" " hydrants	1,300
Miles of water main	160

Meters are read and consumers are billed semi-annually for water consumed in Madison. Since the regulations require that every service line entering a property have its own meter, consumers are billed for the accumulated readings of multiple meters. The water rates within the city are:

First	75,000 cu. ft.	7½¢	per 100 cu. ft.
Second	425,000 " "	6¢	" " "
All over	500,000 " "	4¢	" " "

The demand or service charge, also payable semi-annually and depending upon the size of the meter, is as follows:

⅝″ meter, one consumer	$ 2.00
¾″ " " "	2.50
1″ " " "	3.00
1½″ " " "	4.50
2″ " " "	7.00
3″ " " "	12.00
4″ " " "	20.00
6″ " " "	37.50
Each additional consumer on same meter	.75

The rates for water delivered outside of the city limits are:

First	75,000 cu. ft.	10¢	per 100 cu. ft.
Second	425,000 " "	7½¢	" " "
All over	500,000 " "	6¢	" " "

If a water meter on a service line has not been tested within five years, it will be tested without charge upon the request of the owner or tenant. If it has been tested within five years, a consumer may request a re-test by filing an application and depositing a fee of $1.00 for ⅝″ to 1″ meters, and for 1½″ or larger meters $1.00 per inch of nominal size or fraction thereof. If the meter fails to register within the accuracy limitation of 2% plus or minus on the maximum flow of water or within 10% on the minimum flow, the test charge is canceled and the consumer is credited for the rate of over-registration for a period not exceeding one year prior to the date of the test on the next semi-annual water bill.

Applications for the original installation of a supply are filed by a registered licensed master plumber before any work is permitted. The application requires a legal description of the property, the street location and building number, as well as the size and character of the

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The Harley-Davidson Servi-Car is unequaled for handling a wide range of police work. Its unusual efficiency on traffic details — for marking parked cars and checking parking meters quickly and easily — establishes the Harley-Davidson Servi-Car as an outstanding police vehicle.

But its great utility does not end with traffic work. There is a growing demand by many cities for Servi-Cars — to provide greater flexibility and faster performance in handling routine and special duties such as —

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Officer John G. Vida of Passaic, New Jersey Police, repairs meters with tools carried in the Harley-Davidson Servi-Car.

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✓ Mounting loudspeakers to broadcast safety messages at strategic points

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THE POLICE MOTORCYCLE

supply pipe, and the fixtures or appliances to be supplied. The expense of laying service pipe and of connecting to the service pipes becomes a lien upon the real estate served. No water is supplied until the charge made for the service installation is paid to the city. In case it is necessary to install a new or larger service to replace an existing service, an allowance of 50% of the present cost of the service replaced is allowed, provided the new service is in the same ditch. In no case is this allowance less than $15 and is only made if the old service can be removed when the new service is installed. The Water Department maintains the water services from the street main to the location of the curb cock and all control cocks, valves and boxes, without expense to the property owner. From the point of maintenance by the Water Department, the responsibility for the condition of the line is placed upon the owner or occupant of the property.

If the owner of the building desires a private fire protection system, the Water Department will lay a pipe from the main to the curb and place a valve and valve-box at the curb at the expense of the owner of the premises. No fire service is installed which has a carrying capacity of more than 50% of the capacity of the water main to which it is connected. A swing check-valve is installed in the line between the valve that is installed by the Water Department and the sprinkler heads, hose connections or hydrants, to prevent water from backing into the city's system. The owner may be required to install a meter and pay regular meter rates for all water used, except in case of fire. The city pays to the Water Department the cost of fire protection service, which amounts to approximately $1.00 per capita, or slightly over $50 per hydrant in service.

L. A. SMITH,
Superintendent, Water Department.

Plant City, Fla.

Present population	7,500
Population served	Unknown
Number of active services	1,100
" " meters	1,200
" " hydrants	138
Miles of water main	19

The water rates of Plant City, which have been in effect since January 1, 1930, are:

First 4,000 gals.	$1.50	
4,000 to 15,000 gals.	.28	Per 1,000 Gals.
15,000 to 30,000 "	.26	" " "
30,000 to 50,000 "	.23	" " "
50,000 to 75,000 "	.20	" " "
75,000 gals. on	.18	" " "

All water bills are due on the 10th of each month, and immediately thereafter delinquents are cut off and a charge of $1.00 made for re-establishing the service.

There is a special garden rate of $3.00 per month, which allows the use of 10,000 gals., and all above that at 15c per 1,000 gals. In some cases where a consumer wants as much as a million gals. a month, there is a minimum charge of $100 for this amount, and a charge of 10c per 1,000 gals. above that quantity.

A charge of $10 is made for tapping and carrying the service to the property line from a ¾" tap. From a tap 1" and larger, the consumer is charged for the cost of the meter and the cost of labor and material.

There are no charges for fire hydrants nor for sprinkler services for fire protection.

E. S. TYNER,
Superintendent, Plant City Water Works.

Fort Dodge, Iowa

Present population	23,889
Population served	21,500
Number of active services	5,058
" " meters	5,058
" " hydrants	447
Miles of water main	66

The following water rates are charged to all consumers served by the Fort Dodge Water Works:

Consumers using less than 2,000 gals. in 3 months	$ .90	minimum
First 10,000 gals.	.35	" " "
Next 20,000 "	.25	" " "
" 40,000 "	.15	" " "
" 30,000 "	.12	" " "
" 100,000 "	.10	" " "
" 300,000 "	.07	" " "
" 500,000 "	.06	" " "
All over 1,000,000 gals.	.05½	" " "

A 10% discount is allowed if the bill is paid on or before the 18th of the month in which the bill is rendered. All services 2" or larger where a private supply is maintained and the city supply held as a standby carry a charge of $5.00 per month. All consumers outside the city limits pay 15% more than the rates quoted above.

The regular application for water service is made at the Water Department office, and a separate application is required for each house and each tap, except by special permission of the Water Works Superintendent or where meters are placed for each house served from one tap.

Since the city recently completed a sewage-treatment plant, sewer-rental charges are made as follows for laundries, creameries, dry cleaners, poultry houses, packing houses, oil stations, oil refineries, car-washing stations, manufacturing plants or any plant or place of business that may, in the opinion of the Mayor and City Council, reasonably come under the classification of industry:

	Per 1,000 Gals.
First 500,000 gals. of water used during 3 months	$ .06
Second 500,000 gals. of water used during 3 months	.05
Third 500,000 gals. of water used during 3 months	.04
All over 1,500,000 gals. of water used during 3 months	.03

All other users of water within the city of Fort Dodge are charged 5c per 1,000 gals. of water used, and this is billed as a separate item on the water bill. All classes of users of the sanitary sewer system located outside the city limits are charged 25% additional on the water bill as sewer rental.

There are no charges for public fire hydrants, private fire hydrants, or sprinkler installations used for fire protection.

JOHN W. PRAY,
Superintendent, Water Department.

Princeton, W. Va.

Present population	8,000
Population served	7,500
Number of active services	1,500
" " meters	1,500
" " hydrants	69
Miles of water main	23

The water rates charged by the West Virginia Water Service Co. for water delivered to consumers in Princeton are:

First 1,600 gals. per month through ⅝" meter	$1.05	
First 1,600 gals. per month through ¾" meter	2.00	
First 1,600 gals. per month through 1" meter	3.50	
First 1,600 gals. per month through 1½" meter	8.00	
First 1,600 gals. per month through 2" meter	15.00	
Next 6,000 gals. through any meter	.60	per 1,000 gals.
Next 24,000 gals. per month through any meter	.35	" " "
Next 220,000 gals. per month through any meter	.25	" " "
All over 251,600 gals. per month through any meter	.20	" " "

The water company taps the mains, runs the service lines to the curb and sets the meters at its own expense. The consumer runs the service line from the meter into his property. Water bills are payable monthly at the office of the company, and those not paid within 10 days are subject to a 10% penalty.

There are 69 fire hydrants in Princeton, for which the city pays the lump sum of $333.33 per month.

E. L. DAY,
Manager, West Virginia Water Service Co.

Borough of Caldwell, N. J.

Present population	5,500
Population served	5,600
Number of active services	1,400
" " meters	1,400
" " hydrants	156
Miles of water main	15

The minimum water bill per quarter for metered services in Caldwell is $2.50, with a charge of 40c per 1,000 gals. of water used. Large consumers receive special discounts, as follows:

100,000 to 150,000 gals.	5%
150,000 to 250,000 "	10%
250,000 gals. or over	15%

Applicants for water service are required to pay a fee covering the cost of the service pipe and the meter, the charges varying according to the size of the meter and the size and length of the service pipe.

There are no private hydrants in the borough, and no charge is made to the borough for fire hydrants. A charge of $100 per year for each installation of sprinkler heads for fire protection is made throughout the borough.

LASALLE E. JACOBUS,
Superintendent, Water Department.

The continued demand for copies of the reprints of water rates in the larger cities, published in THE AMERICAN CITY *four and five years ago, has led to the publication of this similar information from a wider population range. These reports will be reprinted at the end of the year.*

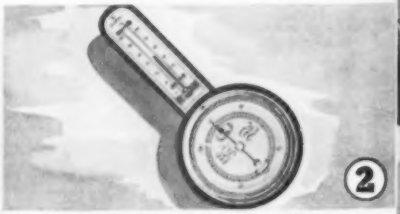
See March issue for Part I.

To be continued in May.

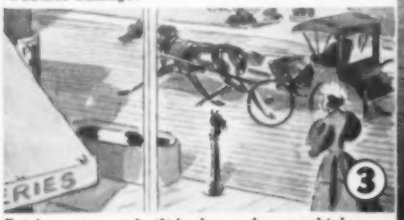
Exclusive with Brick

[1] A FACTORY-MADE SAFETY SURFACE
[2] PROTECTS AGAINST *Both* WEATHER & TRAFF
[3] LONGEST LIFE AND LOWEST UPKEEP

The safety surface of brick is precision-made in modern factories. Nothing is left to chance.



"Save the surface and you save all" applies to pavements, too. A brick surface defeats weather damage.



Brick pavements built for horse-drawn vehicles have instead carried motor traffic for 40 years and are still in service.

Brick offers exclusive features in safety and economy.

A brick pavement is the only pavement that has a *factory*-made safety surface. The coefficient of traction is high. The pavement surface may be inspected for safety before it is laid.

Never has safety on the highways been so important as now. Likewise, never has long pavement life and low upkeep been so important as it is today.

Brick cost less — far less — per year of service. Their life is generally in excess of 30 years. The upkeep costs are low—often nil after years of hard usage. The reason: brick protects against weather as well as traffic damage. Damage by weather roughens pavements and brings on destructive impact from traffic.

If your paved roads and streets cost too much for upkeep and must be replaced too often, begin a program of resurfacing with brick—protect new pavement with a brick surface! It saves money. National Paving Brick Association, National Press Building, Washington, D. C.

BRICK

FOR NEW CONSTRUCTION OR RESURFACE JOBS

Improving Municipal Administration

Current Items from the Public Administration Clearing House

"Almost Frantic" Search for New Municipal Revenues

ENACTMENT of new taxes characterizing an "almost frantic" search for new municipal revenues in 1938 was reported to the International City Managers' Association last month. The report was made by Albert Lepawsky, Executive Director of the Federation of Tax Administrators.

This search for revenues, the report said, produced such taxes as New York City's cigarette, occupancy and gross income taxes, the short-lived Philadelphia gross income tax, Chicago's handbook tax, which the courts invalidated, and chain-store taxes in seven cities, including Savannah and Augusta, Ga. New York City also re-enacted a 2 per cent emergency retail sales tax. New municipal cigarette taxes, other than dealers' license taxes, were enacted during the year not only in New York City—where a 1-cent tax promises to produce $10,000,000 annually—but in Kansas City, Mo., and in several Florida cities. New Orleans passed a 1-cent sales tax to replace the former 2 per cent luxury tax.

The most recent official figures from a sample of 18 cities showed a decrease of 5 per cent in total revenues between 1936 and 1937, while reports from various states in 1938 indicate a further decline in municipal revenues last year, the report said.

Increased property tax collections were indicated by the 1937 figures, although this may be a temporary result of the backlog of uncollected taxes, the report pointed out. Figures showed property taxes represented about 70 per cent of all revenues in 1937 for the 18 cities, as compared with only 63 per cent in 1936.

Police to Inspect Bicycles under New Wilmette Ordinance

POLICE inspection of bicycles to insure compliance with mechanical requirements set up in a new ordinance in Wilmette, Ill., will begin June 1, when the law becomes effective, the International City Managers' Association reports. The ordinance is designed to curb accidents by prohibiting operation of bicycles on congested streets and highways.

Bicycle-testing lanes will be operated at public and parochial schools, and parking zones will be provided in the business district. Riders must observe all traffic signs, but may ride on sidewalks except in certain designated places. If riding in a group, bicycle operators must ride in single file. Extra riders are prohibited. The ordinance requires that bicycles be equipped with a horn or other signaling device, and that night riders be equipped with a headlight visible for at least 200 feet. Red reflectors must be attached to the rear fender.

The chief of police is given power by the ordinance to suspend or revoke licenses for violations. He may also assess fines ranging from $1 to $200.

Wisconsin Cities Take Apprentices

MADISON, WIS., is the first city to hire apprentices for its City Hall under the state-wide plan of training for government careers inaugurated a year ago, the Civil Service Assembly of the United States and Canada reports.

A University of Wisconsin graduate in sociology will serve as an apprentice case worker in the Madison Welfare Department. Under the arrangement, the University grants the student a loan, which he repays from his apprenticeship salary during the year's appointment.

Madison plans to take a second apprentice in the near future. Milwaukee and Wauwatosa are other Wisconsin cities planning similar arrangements. The state government has employed 32 apprentices in various departments since the training plan was adopted.

At Least Eight Cities Collect Cigarette Taxes

AT least eight cities, including New York City, Kansas City, Mo., and six Florida municipalities, levy municipal cigarette taxes, the Federation of Tax Administrators reports. Florida cities collecting the tax are Pensacola, Panama City, DeFuniak Springs, Marianna, Okeechobee and Wewahitchka.

New York City reported that its tax of one cent a package yielded more than $4,000,000 in the first five months of the 1938-39 fiscal year. Recent estimates are that the yield will average approximately $10,000,000 annually. The tax was extended last December to July 1, 1939.

Dallas Finds Taxicab Franchise Success

SUCCESSFUL operation of a taxicab franchise which classifies cabs as public utilities subject to special regulation has been reported by Dallas, Texas, to the International City Managers' Association.

The franchise agreement was inaugurated in January, 1938, as a means of curbing labor disputes, price wars and excessive cruising that existed because of the competition among the several local cab companies. Drawn up by the cab companies themselves, the franchise contains provisions regulating cruising practices, insures collection of passenger damage judgments by requiring $10,000 liability bond, and stipulates that the Supervisor of Public Utilities is to recommend rules, rates and other regulations.

The ordinance also levies a 4 per cent tax on gross receipts of the cab companies, after drivers' wages are deducted. In the first year of its operation the tax netted the city $17,545.33 from 200 cabs joined in the holding company which was granted the franchise.

Washington 34th State to Provide Municipal Housing Authority

WITH the state of Washington passing enabling legislation for local housing authorities, all but 14 states have arranged for cities or counties to enter the large-scale low-rent housing field, the National Association of Housing Officials reports.

Public housing legislation in most of the 34 states contains two provisions of importance to municipalities. It provides for tax exemption in full or in part, and for extensive cooperation between local governments and the housing authorities.

Enabling legislation such as that passed by Washington is pending before at least six state legislatures now in session. They include Missouri, where the proposals have passed the House; Utah, where the Senate has voted its approval; and Kansas, Oklahoma, Iowa and Idaho.

Daily-Rate Payment for Tax-Supported Hospitalization

ALTHOUGH many cities are paying for hospital care of their indigent according to services rendered, some of them are paying on a lump sum or subsidy basis. It has been suggested by the American Public Welfare Association and the American Hospital Association that payment be made exclusively on the basis of service actually rendered, at a flat, per diem rate including all charges for laboratory work, X-ray and other services. A single rate cannot be predetermined for all places, but must be established individually in accordance with local conditions.

On rates of payment and other matters public officials were advised to deal with the hospitals of their communities jointly, by organization of hospital councils or through a joint committee from the local hospitals. Non-governmental hospitals are advised to encourage uniform systems of accounting to facilitate the necessary inspection and supervision of accounts and procedures by public officials.

CHEVROLET TRUCKS

UNBEATABLE FOR DEPENDABILITY AND ECONOMY!

There is every reason in the world why you should now benefit by what Chevrolet has to offer in the way of better trucks, greater truck economy, and wide range of models covering every possible truck requirement.

Because, in 1939 Chevrolet is in a better position to meet your hauling needs—whatever they are—than at any other time in Chevrolet history. All the way from smart, speedy delivery trucks to massive heavy-duty units of 14,000 pounds gross rating, Chevrolet offers 45 models . . . eight different wheelbases . . . and an amazing variety of factory-built bodies.

This is a good time to take advantage of Chevrolet dependability and economy—qualities which have made Chevrolet the nation's largest builder of trucks.

CHEVROLET MOTOR DIVISION, *General Motors Sales Corporation*, DETROIT, MICHIGAN
General Motors Instalment Plan—convenient, economical monthly payments. A General Motors Value.

CHEVROLET

MASSIVE NEW SUPREMLINE TRUCK STYLING . . . COUPE-TYPE CABS . . . VASTLY IMPROVED VISIBILITY • FAMOUS VALVE-IN-HEAD TRUCK ENGINE • POWERFUL HYDRAULIC TRUCK BRAKES (Vacuum-Power Brake Equipment optional on Heavy Duty models at additional cost) • FULL-FLOATING REAR AXLE on Heavy Duty models only (2-Speed Axle optional on Heavy Duty models at additional cost)

Why not remember to mention THE AMERICAN CITY?

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

Efficiency Replaces Municipal Incompetency

NEWPORT, KY.—This city of 35,000 population rejoices in having made during 1938 a demonstration—as its neighbor, Cincinnati, Ohio, had previously done and continues to do—of what can be accomplished when an aroused citizenship determines no longer to sleep in politically ridden municipal incompetency.

As a result of previous mismanagement of municipal affairs, the 1937 budget had been exceeded by $214,000; credit was non-existent; city payrolls bulged with non-productive pensioners; Newport faced bankruptcy. Alarmed, Newport's voters swept into office City Commissioners pledged to a business administration. These Commissioners proceeded to bring charges against the then city manager, removing him forcibly from office. The charges were later sustained in the courts of Kentucky. Casting about for a new city manager, they drafted a well-known civil engineer, J. B. Morlidge.

Mr. Morlidge, a resident of Newport, had for the past fifteen years conducted a highly successful engineering practice in Cincinnati. Prior to that time he had been a practical student of municipal operations, having served several terms as a City Commissioner of Newport before the installation of city manager government.

Without delay, and brooking no political interference, Mr. Morlidge proceeded to revamp the entire tottering city government. Unnecessary and incompetent city employees were dismissed forthwith. Payrolls were slashed 40 per cent. Departments and systems were overhauled. Efficiency was made paramount. Borrowing was curtailed. The budget was deflated and put on a pragmatic basis. Department heads were warned to stay within the appropriation.

The task was enormous, but after painstaking effort it began to bring results. These results are partially set out in *The Kentucky City* for February, 1939. The following partially tells the story:

"A centralized purchasing system was established, which has operated effectively and, at the end of its first year, shows discounts of $1,200 received on purchases of ordinary supplies. The city's refuse and ash collection service was overhauled, and the routes rearranged in a manner that resulted in an operating cost for 1938 of $1,514 less than the same service cost for the previous year. By close cooperation with the recreational program of the WPA, the city operated its parks and playgrounds during 1938 for approximately $2,000 less than in 1937. Administrative reorganization has reduced the total number of city employees by approximately 25 per cent without curtailing in any respect the program or service performed by the city. . . .

"At the end of 1937 Newport had a total outstanding debt of $2,138,100, consisting of $1,757,100 of bonded debt and $381,000 of current obligations. At the end of 1938 the outstanding bonded debt of the city is $1,918,100 and there is no current debt. This indicates a reduction of the total debt of the city of $220,000 since January 1, 1938, and a considerable portion of the previously bonded debt has been refunded at more advantageous interest rates."

Since the publication of the foregoing article it has been learned that City Manager Morlidge has reduced the Newport tax rate 10 cents on each $100 valuation for 1939 operations and has recommended a 10 per cent increase in the compensation of police officers and firemen.

The people of Newport are proud of their present City Manager and of his accomplishments, and are looking forward to further municipal progress during 1939 and the years ahead.

Tarboro's Profitable Milk-Pasteurization Plant

TARBORO, N. C.—Created to meet a health emergency, Tarboro's municipally owned milk business has proved so successful and so satisfactory that it has endured twenty years* against all the early misgivings of the community.

During the infantile paralysis epidemic of 1918, Tarboro became alarmed because of lack of pasteurization facilities among neighboring farmers. Utterly lacking precedent, the City Board nevertheless decided a drastic and immediate step was necessary. With tax money, the dairy was built, and the experiment fearfully launched.

Under the system, producers bring milk to the plant, where they receive 25 cents a gallon, leaving a margin of 5.75 cents per quart for the dairy. The city retails milk at from 4 to 6 cents less than the average North Carolina price. The cost has been greatly reduced since the beginning of the enterprise. Daily sales run around 400 gallons, and all cost of operation, plus cost of building and equipment, have been paid from profits.

The plant is in charge of J. L. Wall, and in Tarboro it is regarded with the same familarity and unconcern as any other department of the city. The dairy ranks above the average standard in inspection rating.

DEPARTMENT OF CONSERVATION AND DEVELOPMENT, RALEIGH, N. C.

* See THE AMERICAN CITY, August, 1922, page 137, for an item regarding the early operation.

To Aid Non-Partisanship in Village Affairs

BRONXVILLE, N. Y.—A practical step towards the elimination of national politics from local affairs has been taken by the Democratic Committee of the village of Bronxville. The following statement to the voters, issued on March 2 by Arthur G. Mathews, Chairman of that committee, and subsequently published as an advertisement sponsored by a non-partisan committee, tells the story:

Do YOU think

that national party politics should continue to govern Bronxville's village elections ?

IN A COMMUNITY so intelligent and so limited in area as Bronxville — we hold these truths to be self-evident:

1. That our local problems are problems of community citizenship—not of political partisanship.
2. That good citizenship locally is measurable in terms of one's interest in, and service to, *Bronxville*—not in terms of one's national party enrollment.
3. That our local party groups should be able to work in *civic harmony* for the best interests of our Village.

That these truths may be made effective in the selection of our Village Trustees—we believe the majority of Bronxville residents, regardless of party preference, favor the nomination of such Trustees by a non-partisan committee of citizens.

We feel that our present Village Trustees are sympathetic toward that procedure. We know that our School Trustees are so selected, and that Scarsdale nominates its village officials in that manner.

Under the present system of nominating our Village Trustees by party committees, we believe the majority of Bronxville residents feel that the minority party here should be accorded a representation on the Village Board, and a part in nominating that representation.

We believe that our present Village Trustees favor such representation. We know that the principle of minority representation is observed even under the non-partisan plan in Scarsdale.

The Chairman of the majority party in Bronxville and some of his associates, however, are opposed both to non-partisan nominations and minority representation. They want their party committee to retain and exercise its present power: (1) to nominate and elect—through their force of numbers—all our Village Trustees, and (2) to choose as Trustees only enrolled members of their party.

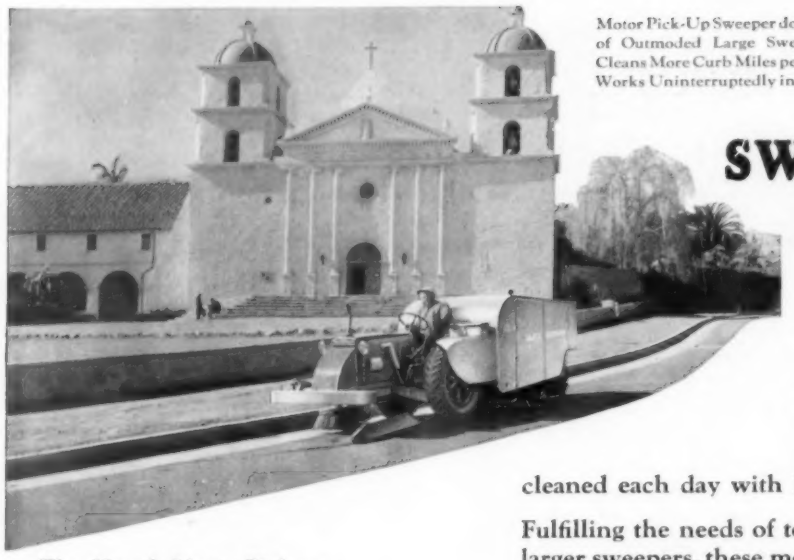
We sincerely believe, as citizens, that such an attitude injects an undesirable spirit of political partisanship and control into the selection of our Trustees—by automatically barring from service on our Village Board every one citizen enrolled in the minority party here, or not enrolled in any party.

Convinced that to make party nominations of our own would simply serve to nurture such unnecessary partisanship in our Village Elections, we are deliberately refraining from such action.

The above statement, issued on March 2nd, 1939 by the Village Democratic Committee, is sponsored by a non-partisan group of Bronxville citizens.

Pilgrimages to Historic Libraries of New Jersey

GLEN RIDGE, N. J.—The same New Jersey roads where once the Red Coats marched will offer themselves again this spring to wandering pilgrims. This time there will be no echoing rifles or cannons. There will be only the hum of cars as they hurry by over smooth concrete or macadam. But the same landscape will be there, the same trees, the



Motor Pick-Up Sweeper does work of Outmoded Large Sweepers—Cleans More Curb Miles per Day—Works Uninterruptedly in Traffic.

The Hough Motor Pick-up Sweeper illustrated above is one of the units used for keeping the streets of Santa Barbara, California, clean and safe.

SWEEP MORE CURB MILES PER DAY!

Operating at speeds up to 8 M.P.H., clear vision for operator in all directions, shorter turns, in-and-out maneuverability; and positive, full-floating brush and broom action assure more curb miles cleaned each day with Hough Motor Pick-Up Sweepers.

Fulfilling the needs of today and retaining the features of larger sweepers, these modern high-speed units thoroughly clean the 6 ft. gutter path—dirt box is large and leak-proof—water supply is ample—and new spray nozzles conserve water. Bulletin No. 112 tells the complete story.

ROAD BUILDING and MATERIALS HANDLING EQUIPMENT

HOUGH

"Since 1920"

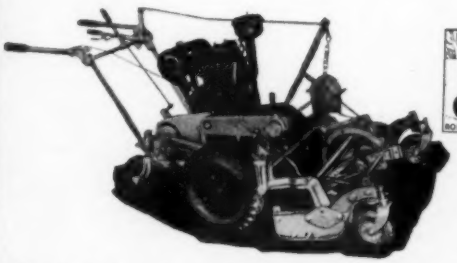
THE FRANK G. HOUGH CO.
919 N. Michigan Ave.
Chicago, U. S. A.

When ONE Truck does the work of FIVE— that's COST CUTTING!

WHEREVER LOADING IS DONE BY HAND, one Brooks Load-Lugger and 5 to 10 Load-Lugger Buckets may replace an equal number of trucks, distance of haul considered. Cut hauling investments of unnecessary trucks . . . stop the heavy time and money loss of trucks standing idle for loading. In excavation work, stone quarries, road work, concrete aggregate hauling, W.P.A. projects, snow removal, and countless other operations, the Brooks Load-Lugger means tremendous savings. Built in four capacities . . . mountable on any truck chassis in a few hours. ONE PIECE Buckets. Write or wire for details and completely illustrated folder NOW.

BROOKS EQUIPMENT & MFG. CO.
94 Davenport Road Knoxville, Tennessee

UPKEEP COSTS ARE LOWERED BY THE IDEAL *Caretaker*



Idle time and overhead are reduced when an Ideal Caretaker is on the job because it provides **year-around** usability and economy. The Caretaker is composed of an Ideal power unit and separate attachments for mowing, weed cutting, rolling, sweeping, spraying, etc.

The change from one attachment to another may be easily and quickly accomplished. For example, the Caretaker may be converted from a power mower to a power sweeper in less than thirty minutes.

The Caretaker is the most advanced development since the introduction of the first power lawn mower. It is the first **practical** combination of grounds-care equipment to be introduced. Complete details about the Ideal power unit and each one of the time and money-saving attachments are contained in the new Ideal Caretaker catalog. Write for your copy today—there is no obligation.

IDEAL POWER LAWN MOWER CO.
400 Kalamazoo Street Lansing, Michigan
New York Branch
12 Harrison St.
New Rochelle, N. Y.
Canadian Distributors
Aikenhead Hardware, Ltd.
17 Temperance St., Toronto, Ont.

same ocean on the east, the same hills to the west, and in many cases the same stone houses and taverns.

The tiny state of New Jersey, a garden spot only 166 miles long and 57 miles wide, has always attracted seekers of historical treasure. With this in mind, a group of librarians are promoting through their state organization a series of pilgrimages to little-known historic spots in the state as their part in observing the 50th Anniversary of the New Jersey Library Association. In an easy, rambling way the pilgrimages, which are to take place in May, will go to Princeton, Trenton, Burlington, Morristown, Newark, and a number of other cities, towns, and hamlets rich in historical memories. Focal points of the pilgrimages will be the thirteen historically important libraries founded in New Jersey before 1800.

Ten pilgrimages are listed in an illustrated pamphlet published for the occasion by the Junior Members Round Table of the New Jersey Library Association. Copies may be obtained by writing Miss Elizabeth Madden of the Montclair Public Library, Montclair, N. J., and inclosing 3 cents in stamps to cover the cost of mailing.

DOROTHY W. STICKLE,
Pilgrimage Committee, Glen Ridge Public Library.

Educating the Pedestrian to Traffic Safety

PITTSBURGH, PA.—Confronted with the mounting pedestrian accidents and fatalities in traffic, Pittsburgh's Better Traffic Committee has developed a novel idea in educating the pedestrian to traffic safety.

Each month an interesting and arresting idea is presented pictorially on a small card dealing with some safe pedestrian walking habit or an unsafe walking practice which has resulted in accidents to pedestrians.

Starting out with 500 cards a month, which were printed and furnished to the taxicab company in Pittsburgh, the Better Traffic Committee arranged with the Museum Extension Projects, a WPA function, to have silk-screened 5,000 cards each month. These are now being furnished to building superintendents to be posted in elevators, bulletin boards, offices, and at such other places where pedestrians are constantly in traffic. In addition to this distribution source, the cards are now being furnished to industrial plants, department stores, retail institutions, banks, and all places desiring to cooperate with the movement in Pittsburgh to make the pedestrian more traffic safety conscious.

The cards are produced at nominal cost, since the Better Traffic Committee furnishes the rough sketch of the idea of the month to the WPA artists who execute the final drawing; the Better Traffic Committee furnishes the paint, silk-screening materials, cardboard, etc., and the WPA organization furnishes the labor as one of their projects.

In addition to the distribution of the 5,000 cards each month, mats and stereotypes of the new cards as they appear monthly are now being furnished to the community newspapers.

MORRIS M. NAUMOFF,
Education Secretary, Better Traffic Committee, City of Pittsburgh, Pa.

CARDS USED IN THE PITTSBURGH TRAFFIC SAFETY CAMPAIGN, CONDUCTED BY THE BETTER TRAFFIC COMMITTEE IN EDUCATING THE PEDESTRIAN

Support Urged for Hayden Bill (S.1265)

CHICAGO, ILL.—Urban planning, undertaken on a broad scale, can put a bottom under city rebuilding as nothing else can. It can thus encourage reemployment on a scale promised in no other industry. Our country today is more than half urban. Unless we can conserve urban values, it will not be enough to have conserved agricultural soils against drouth and erosion. The Federal Government in its own housing efforts will presently have many hundreds of millions of dollars in loans and grants invested in city building. This is at present being undertaken without adequate city planning at its foundation. We urgently need a national clearing-house for city-planning encouragement and aid. The Hayden Bill (S. 1265) now before Congress, opening the promise of such a clearing-house, should have the energetic support of civic groups, of business groups within and without the field of real estate and construction, and of every citizen concerned with a more comfortable, less wasteful arrangement of cities.

HERBERT U. NELSON,
Executive Secretary, National Association of Real Estate Boards.

New Jersey's Light-Reflecting Concrete Curb

TRENTON, N. J.—New Jersey's Highway Commissioner, E. Donald Sterner, faced with the problem of securing greater safety for millions of night motorists, recently approved experimental designs of curbing which reflect light from headlights back to the driver's eyes, thereby making the curb visible, and has authorized construction of several miles of such curb flanking the center islands of divided roadways and the outside edges of roadways.

These curbs are called "Reflecting Curb" and are constructed either in precast units or by the cast-in-place method. There are two types—(1) a slant or sloping curb flanking the center islands of divided roadways and channelizing islands at intersections; and (2) a vertical curb similar to the ordinary curb in city streets.

The principle of light reflection is the same in either type. Smooth faces normal to the headlight's rays and driver's vision are provided by means of either a sawtooth profile or depressed panels in the surface of the curb. These faces are so close together that a continuous band of reflected light is presented to the driver's view, similar to that of a white picket fence viewed at a flat angle.

It is especially noteworthy that the effectiveness of the curb actually increases

Protect Your Shade Trees

with BEAN Park Sprayers

One of the Smartest Investments Any Municipality Can Make

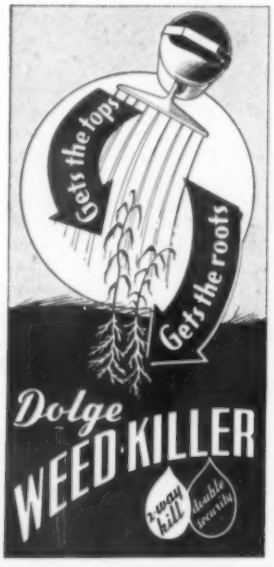
BEAN Park Sprayers have the pressure and capacity to reach the tops of the tallest trees and do fast, thorough work. The All-enclosed BEAN Royal Pump is sealed from dirt and dust, operates continuously in an oil bath, and is built for years and years of service. Completely equipped with ball and roller bearings throughout. Capacities up to 60 gallons a minute at up to 800 pounds pressure. WRITE FOR SPECIAL PARK SPRAYER CATALOG.

JOHN BEAN MFG. CO.

Division Food Machinery Corporation

5 Hosmer St.
Lansing, Mich.

105 W. Julian St.
San Jose, Calif.



SPRINKLING Dolge Weed-Killer on your drives, walks, gutters, parking places and tennis courts ONCE usually keeps them free from weeds thru the whole season. Because this powerful chemical gives you the double security of a 2-way kill. It acts on the stems and leaves; strangles the growth. And it penetrates the roots; prevents the growth from sprouting again.

Dolge Weed-Killer has the highest possible concentration of active ingredients. It packs the powder needed to kill rank deep-rooted growth, such as poison ivy, thistles, nettles, milkweed, crab grass, burdock, horsetail and others. Write for details, rebates. Note that Dolge makes a complete ground maintenance line. Manual on request, free.

The C. B. DOLGE CO.

Westport Conn.

Keep your streets and parks free from waste and litter. Use

SOLAR Self-Closing Receptacles

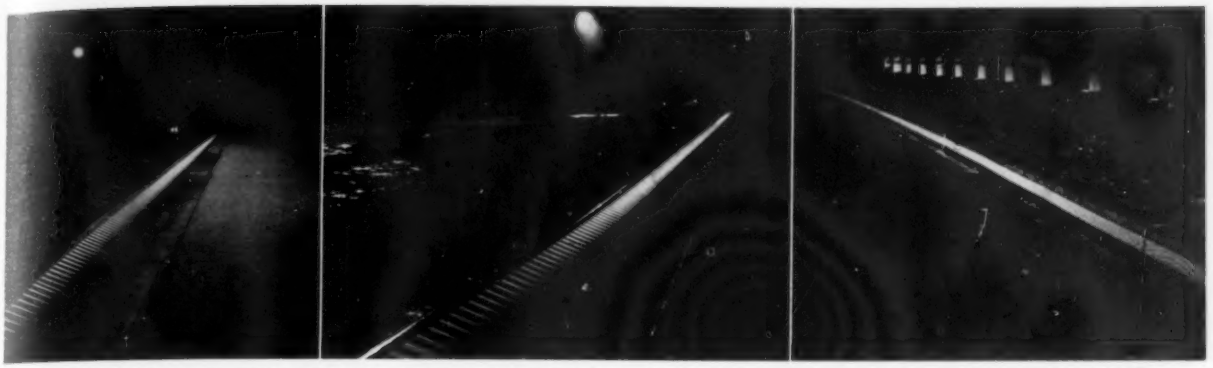
Inviting, easy to empty. Made in a variety of sizes and colors for various uses.

SOLAR-STURGES MFG. CO.
Melrose Park, Ill.

Write for Booklet and Prices

EASY TO USE

EASY TO EMPTY



WHITE CONCRETE CURBS, PRECAST (LEFT AND MIDDLE), AND (AT RIGHT) SIDE-REFLECTING CURBS CAST IN PLACE
First two views show curb reflecting both highway lights and headlights on (1) a clear night and (2) a rainy night; and the vertical curb with headlights turned directly on curb

on rainy nights because the film of water flowing over the reflecting faces increases the intensity of reflection. The latest models of precast curb produce a gleam that appears much like a series of reflector buttons set in pairs on the whole length of the curb. The theoretical range of this gleaming line is from 75 feet to 250 feet.

Although both the precast and cast- in-place methods are used, the precast method appears to give better results in the construction of slant curb because of the smoother and denser surfaces produced, and also because the angle of the reflecting faces is absolutely controlled by the mold. The vertical curb is cast in place against a side form which itself constitutes the desired mold.

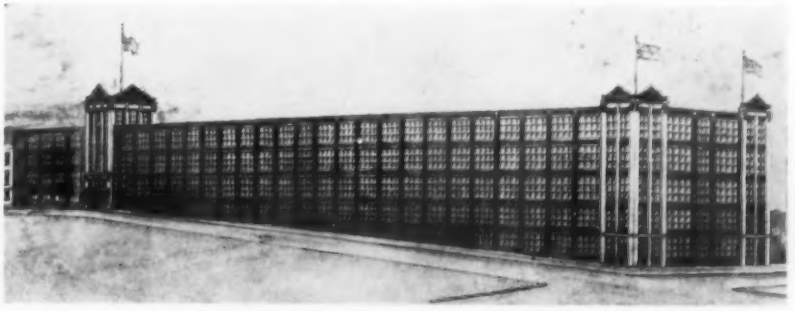
In either type curb, the exposed surface embracing the series of reflecting faces is made of white concrete 2 inches thick in cast-in-place curb, and ½ to 1 inch thick in precast curb. Both are backed up by grey concrete. The mix specified for precast curb is 1 to 5¼ with a ratio of fine to coarse aggregate between 50 and 67 per cent, the fine aggregate being a white quartz sand. The mix for cast-in-place curb is 1:1¾:3½.

This work is all new, to the present, but the curb has already been specified in 18 contracts covering 40 miles of road, now more than half completed.

H. W. GIFFIN,
Engineer, Survey and Plans, New Jersey State Highway Department.

Industrial Promotion for Prosperity? Or Chaos?

The two news items here published report local subsidies for industrial promotion through tax exemption and otherwise. The other side of the picture is presented in the excerpts which follow from a contribution by an eminent authority on municipal taxation in a symposium on "Tax Exemption" about to be issued by the Tax Policy League.



HAZLETON CITY AUTHORITY BUILDING
Now being rented as factory floor space to induce industries to move to Hazleton, Pa.

City Authority Stimulates Industrial Expansion

HAZLETON, PA.—"An Investment in the Future of Hazleton is an Investment in Yourself," began the opening paragraph of a page advertisement appearing in the local daily paper. The article announced the opening of a campaign to raise $200,000 to purchase for industrial expansion a large idle building which, because of high maintenance and depreciation costs, was about to be razed.

As a first step, the cooperation of City Council was secured in creating a City Authority under whose ownership the building would be free of taxes. It is provided by a Pennsylvania law of 1935 that "for a limited period of time bodies corporate and politic may be created to acquire, hold, improve, maintain and operate certain projects and to borrow money and issue bonds therefor."

Members of the Hazleton Chamber of Commerce recognized the opportunity. A campaign was conducted by the Chamber, and $202,850 was subscribed by five banks, executives of the corporation from which the building was purchased, and nearly 200 citizens and business firms in Hazleton.

The page advertisement read in part:

"If you are interested in attracting new industries and making Hazleton a more progressive city . . . Read This!

"It is well known that cities and towns in every state of the Union are using every means to secure additional industries. The city of Hazleton in order to grow must also encourage new industry. We can't just talk about it . . . either we stand still or go forward. . . . Here is our message:

"The Duplan Silk Corporation building representing four floors and basement, with a capacity of 235,000 square feet, all brick construction, can be purchased for $185,000. It may seem to be a tremendous undertaking . . . but, read on . . .

"A tax-free bond issue for $200,000 is planned. The banks of Hazleton have offered to subscribe one-half of this amount, leaving $100,000.

"Now, of this amount the Duplan Silk Corporation will buy $35,000, leaving $65,000 for the community to subscribe. While *it* is true only $50,000 is needed, the additional $15,000 is for repairs that may or may not be necessary . . . in other words a safety balance. Furthermore . . .

"The Duplan Silk Corporation will rent the second and third floors of this structure (not affecting their original one-story building which is now in operation) for a period of ten years at an annual rental charge of $12,000.

WHAT TO DEMAND OF A *Hydrant . . . and a Valve*

- *Quick Water* with least possible shock. Proper shut-off without water hammer.
- *Proper Drainage*. Hydrant automatically drained at *lowest* point when closed.
- *No Flooding*. Accidental breaking of the hydrant, such as might result by collision from a heavy truck, will not cause flood since the gate when closed is wedge-locked.
- *Easy Inspection and Servicing* without unscrewing anything below the ground level. All working parts removed as one unit by lifting stem through top of hydrant.

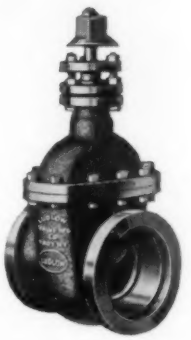
Only the slide gate principle provides *all* these advantages. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all *water works valves* for nearly three-quarters of a century. It likewise insures *complete security* in fire hydrants.

Full information free on request.

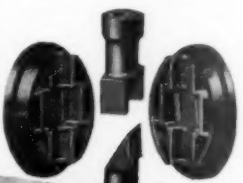
- *Smooth, Positive Operation*. Gates positioned *directly* opposite ports before wedging, and entirely unwedged *before* being raised.
- *Positive Closure* — even after years of service in the open position; flexible-action gates *self-adjusting* to seats.
- *Self-Cleaning*. Rings cleaned *throughout entire stroke*. No *internal guides* to cause foul-up.
- *Ready Replacement of Parts*. Simple construction with ample tolerances, permitting ready replacement of parts.

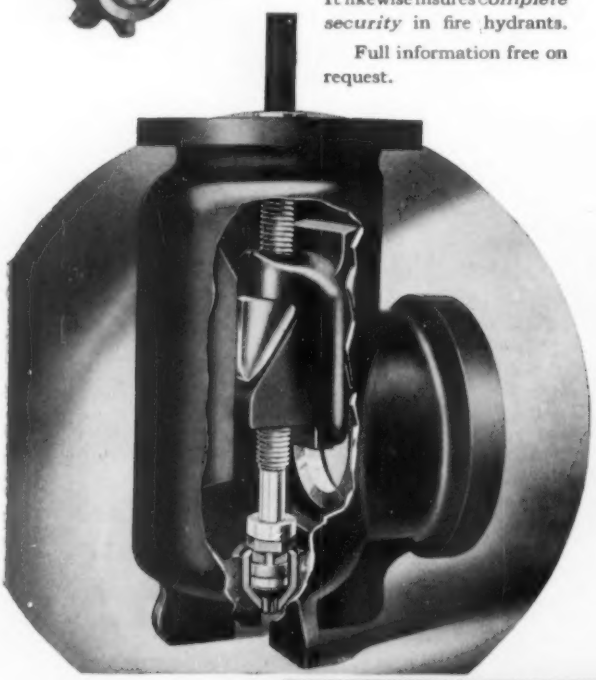
Only the parallel seat, double wedge type slide gate valve provides *all* these essential benefits. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all water works valves for nearly three-quarters of a century.

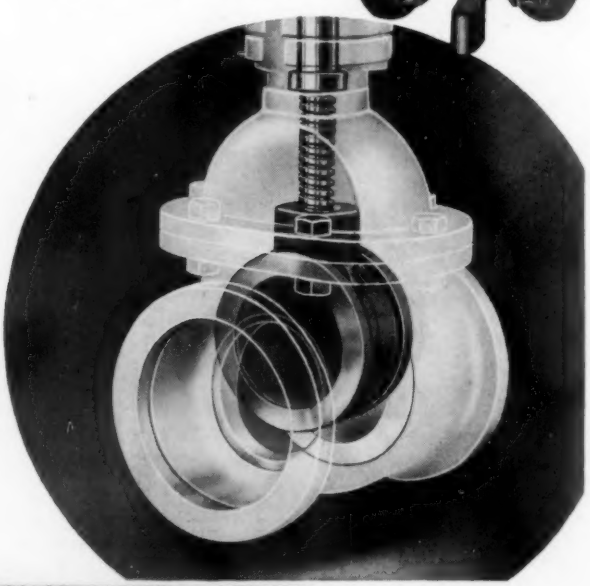
Full information free on request.



LUDLOW PRINCIPLE
Self-releasing 30° angle wedges and flexible action gates self-adjusting to seats for improved performance, longer life.







Notice the sound engineering of the wedge-lock principle, and its simple, sturdy construction.

The LUDLOW VALVE MFG·CO· TROY·N·Y· SINCE 1866

Experienced water works men call this the "most flexible" valve. Many years of trouble-free service have proved unmatchable superiority.

Why not remember to mention THE AMERICAN CITY?

"The revenue from the Duplan Silk Corporation rental will pay the 4 per cent interest on the bonds and upkeep. The rentals from the basement, first and fourth floors will reduce the principal.

"At the present time, Hazleton does not have suitable factory buildings to induce industries which require large floor space to locate here."

Immediately after the purchase of the building by the citizens, it was leased for a considerable number of years to the Duplan Silk Corporation, the original owners. Two floors totaling nearly 100,000 square feet now house 250 people of our community engaged in manufacturing silk.

Nearly one-half of the fourth floor, or about 20,000 square feet, was leased to a shirt manufacturer for a cutting department. About 35 men are now working on this floor.

The top floor has been leased for six years to a footwear company. This floor has 48,814 square feet. Three hundred of our citizens will soon be making slippers, sandals and footwear.

What greater work can citizens be engaged in than giving a man or woman a permanent position at good wages? Idle money in the banks of our country will not place idle men and women in positions. By the cooperation of the business men, property owners, banks and professional men, a considerable number of plans can be adopted to revive failing industries, extend existing manufacturing enterprises and to bring in new payrolls to increase employment, thus creating a better economic and social life in the average community.

FRANK MANTZ,
Executive Secretary, Hazleton Chamber of Commerce, Hazleton, Pa.

Natchez Builds Factory by Municipal Bond Issue

THE opening March 1 of an automobile tire factory built by the city of Natchez, Miss., marks the latest development in Mississippi's program to "balance agriculture with industry," the International City Managers' Association reports.

Construction of the new Natchez factory, warehouse and offices was financed by a $300,000 municipal bond issue, and the plant was leased to a private manufacturer. The city also provided water, sewerage and road facilities. The corporation leasing the factory agreed to install at least $500,000 worth of equipment, insure the plant, and keep it in good repair. The corporation is to pay $50 a month rent for a period of five years. At the end of the five-year lease period it may purchase the plant, which then goes on the tax rolls. The factory promises a $2,500,000 payroll for the five-year period, exclusive of executive salaries, with the proviso for a 10 per cent payment to the city on any deficiencies in the payroll. The plant will supply the municipality with tires for city-owned automobiles.

Municipalities in other states have within recent years offered tax exemption and other inducements to secure industries, the Association pointed out, but Mississippi cities are the first authorized by state law to finance directly. Since enactment of this law in 1936 eight cities have voted bonds totaling $542,000 for this purpose.

The financing is regulated by the Mississippi Industrial Commission, which has the power to investigate the financial standing, labor record and public policy of each industry seeking the cities' aid and to refuse it when necessary. Twenty per cent of a locality's electors must sign the petition for the plant, and two-thirds of the voters must approve the bond issue after it is sanctioned by the Commission. Under terms of the law, if the municipality itself desires to operate a factory, the Commission must determine that it is "well conceived, has a reasonable prospect of success, will relieve unemployment or will add materially to the financial and business interest of the municipality."

The tire factory is the second venture of Natchez under the industrial program. A garment factory built with funds raised by popular subscription has been in operation for a year and a half and now employs 300 workers. Other Mississippi municipalities that have voted bonds to construct new industrial plants include Amory, Durant, Grenada, Newton, Terry, Union and Winona.

Luring Industry Through Tax Exemption

By KENNETH J. McCARREN
Vice-President, Detroit Board of Assessors

FOR years students of taxation have been campaigning for the adoption of uniform tax laws throughout the nation. Common sense dictates that economic stability cannot be obtained until tax conflicts are eliminated and the tax burden is levied on a fair and equitable basis. Yet, regardless of this sound advice, the legislatures and electorates of some states have enacted tax-exemption laws that further complicate the national tax structure, and some cities close their eyes to constitutional and statutory requirements and grant tax exemption in whole or in part to certain industrial property.

The states complain about encroachments by the Federal Government and protest against its infringement on states' rights. But, at the same time, there is a continuous economic war among states, and among taxing districts within states. Each is struggling for economic supremacy, but at the same time weakening its own economic structure, as well as that of others.

There is no complaint against states that offer natural inducements to attract industry. Subsidies in the form of tax exemptions, however, are in violation of the first principles of a sound tax program. Today, they affect the states and local units that are endeavoring to levy taxes on a fair basis, but if the competition increases and other states are forced to offer grants and subsidies, it is hard to predict what the result will be.

The practice of certain communities in offering an industry local tax exemption over a stated period as an inducement to locate its operations in that community, is one that on the surface offers that industry a lift on the road to prosperity.

At the same time, on the surface, it offers the community a lift toward its goal as an industrial metropolis. After we have scrutinized the fallacies that lie beneath this bright-appearing surface, its economic weakness becomes apparent, and the whole unsound proposition becomes indeed another gift horse. If the industry must consider as a basis of its future prosperity the shirking of a cardinal duty—its equitable share of the cost of government—it seems that its house is built on the sands, and its owners will be better advised to invest their money in some other line of endeavor.

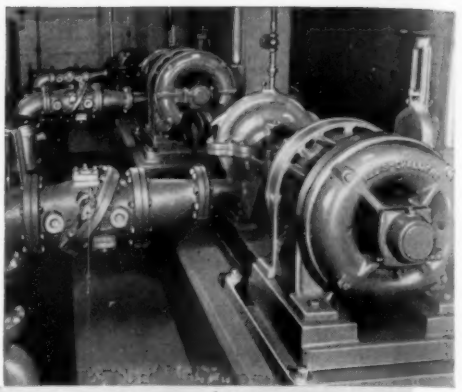
If the community is so lacking in attractions that it must violate sound principles of taxation, or its own tax laws, in order to attract new industries, it will be better advised to maintain undisturbed its existing status, for it cannot hope permanently to keep up the competitive pace with other communities possessing these attractions. It is axiomatic that disregard of natural economic laws leads ultimately, but, none the less surely, to economic chaos, and this applies to governmental units as well as private enterprises. The old adage that when you dance you must pay the fiddler, is still true. . . .

I submit that tax exemption as the price of securing a new industry in any given locality is in conflict with all accepted principles of sound taxation. But the most serious aspects of these subsidies rests in the fact that there is no logical end. The granting of subsidies by one community eventually impels other communities to grant similar or larger subsidies, almost as measures of self-protection. Such a policy, if continued over a long-enough period of time, should logically end in complete exemption of all industrial enterprises, with disastrous effects on our whole national economy.

EDITORIAL NOTE.—The foregoing are the opening and concluding paragraphs from Mr. McCarren's challenging chapter in the Tax Policy League's symposium on "Tax Exemption," to be published this month.

. . . HOW A MICHIGAN CITY GOT MORE WATER AT LESS COST!

Read How Allis-Chalmers Pumps Solved a Serious Problem at Marysville, Michigan . . . Provided Enough Capacity for Years to Come . . . At a Pumping Cost of Only a Little More Than 1½c Per 1000 Gallons! Find Out How You Can Solve Your Pumping Problems . . . with the Equipment That Pays for Itself!



TO ATTRACT NEW industries, a city needs plenty of water . . . that's why Mayor Edward C. Guck of Marysville, Michigan, is proud of their new pumping plant—designed by Pate & Hirn . . . with Allis-Chalmers pumps giving low costs and big capacity for future growth!

How to increase pumping capacity without increasing pumping costs . . . that's the problem of many growing industrial towns! That was the problem the city of Marysville, Michigan, met and solved . . . with Allis-Chalmers Centrifugal Pumps!

Formerly, pumping costs in Marysville were excessive . . . and covered only booster pumping of limited supplies of raw water. Then, suddenly the picture changed—a large corporation established a new plant in the city. That's when the city of Marysville knew they had to do something to provide more water . . . economically!

More water at less cost is what they wanted . . . and what they got! For when they built their new plant in 1938, they installed new high-speed, high efficiency Allis-Chalmers Centrifugal Pumps on the job. And when they figured up their costs, they found they had a sensationally new low cost of $0.0156 per 1,000 gallons, a figure any city can be proud of!

Allis-Chalmers Pumps Cut Costs!

Today, Marysville boasts a completely modern plant, allowing an extremely wide margin for fire protection and future growth . . . strong appeals to attract new industries . . . and it costs them hardly more than 1½c per 1,000 gallons. That's important news to every city or plant that wants more water capacity at less cost!

If you want to increase your pumping capacity . . . decrease your pumping costs—learn how you can do it with Allis-Chalmers Centrifugal Pumps . . . the equipment that is helping hundreds of municipalities and industrial plants to show amazingly low costs for water handling!

Get the story of the Equipment that Pays for Itself! Write to Allis-Chalmers. Or better yet — there's a trained pump man in the Allis-Chalmers district office near you whose job it is to help solve your pumping problems . . . get better pumping efficiencies for you . . . cut your costs! Why not call him in today for a study of your problems?

1022

CENTRIFUGAL PUMP DIVISION

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SINGLE-STAGE DOUBLE-SUCTION PUMPS • CLOSE-COUPLED SINGLE-STAGE SSUnit PUMPS • MULTI-STAGE PUMPS • PAPER STOCK PUMPS • MIXED FLOW AND AXIAL FLOW PUMPS • AND SPECIAL DESIGNS FOR UNUSUAL APPLICATIONS

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York

Paul L. Green, Chairman; George W. Barton, William C. Brandes, Edward H. Eames, Ralph W. Eaton, William G. Eliot, III, James R. Guthrie, Harry C. Koch, E. B. Lefferts, Miller McClintock, William R. McConochie, Theodore W. Matson, Robert A. Mitchell, John B. Moriarty, William A. Van Duzer, Ralph F. Michel

Does My City Need a Traffic Engineer?

Are There Delays or Confusion at Intersections?
Are There Too Many or Too Few Regulations?
Do We Use the Right Equipment?
Is There Parking Congestion?
Are Lives Being Lost?

By THEODORE M. MATSON
Research Associate, Bureau of Street Traffic Research,
Yale University, New Haven, Conn.

RECENT accident statistics show that approximately 7 out of every 10 people killed in traffic lose their lives in rural areas or in municipalities under 10,000 population. This evidence alone seems to show conclusively that the traffic problem is primarily one coming under the jurisdiction of the state. Adequate administrative machinery should be set up by the state government to assist small cities and rural areas in reducing accidents, for traffic control and management are needed in every town.

Most small cities have a state highway running through them, and all too frequently this highway passes through the business district. Here will be found severe congestion caused primarily by residents of the surrounding territory doing business with the local merchants. The curbs are crowded with parked vehicles, making through passage difficult. Every few miles along the state highway this condition is repeated. In these successive business areas parking is at a premium, especially on Saturday afternoon and evening when all the surrounding countryside goes to town. Under these conditions it is not at all uncommon to have Main Street jammed with parked vehicles and pedestrians, producing conditions actually worse than in metropolitan areas.

It seems to me, therefore, that from both the accident standpoint and the congestion standpoint, a major portion of responsibility to do something rests with the state.

Uniformity Demands It

Various specific treatments for various types of traffic ailments have been worked out and are rapidly becoming established, but their application is haphazard. This is largely due to recent recognition of the problem and to lack of agreement on how to treat specific traffic troubles. Despite laudable sincere efforts of local police departments, all too frequently it is the merchants, the bankers, the local business men, who determine what shall be. If such groups want diagonal parking at both curbs and in the center of the street, the local police have no choice in the matter. When the extreme demands of through traffic enter into this confusion of opinionated traffic management, the resulting conditions are chaotic.

The need to protect pedestrians, the proper design and operation of signals, the establishment of one-way traffic, the through street, and all the various types of devices and regulations, may be just as urgent in the small community as in the large community. Every intersection should be controlled on a uniform principle. Indeed, the need for uniformity in handling traffic as it rolls along through every highway in the state is obvious, for motorists do not recognize political boundaries. Only confusion and irritation can result from attempting to enforce the "Podunk System" at one location on the road and the "Kankakee System" at another. State authority is required to determine how traffic can best be handled in the small community as well as along the rural highway system.

Is the traffic situation in any community satisfactory? Have I evidence that it is not? Have there been unfortunate accidents which might happen again? Do I and my fellow townsmen find difficulty in going about our business in the downtown district, and interference by the fast through traffic? Are mothers concerned about their children who must cross the state highway to reach the school? Then there was that local Jones' boy who never did learn how to drive a car properly and finally killed himself down at the railroad crossing.

The merchants are divided on whether the state highway should be carried through the town. Naturally, Bill Sykes, who runs the gas station, is all for it. But the man who runs the grocery store on the other side of the highway is ag'in' it. How and where shall we seek the answers to these problems?

The author believes that competent advice should be furnished and applied in exactly the same manner as the state department of health would deal with an epidemic of disease. No city of less than 10,000 population can afford to employ, or efficiently employ, the full-time services of a competent traffic expert, and it is questionable whether there is a sufficiently well-trained personnel available today to supply such a demand. Small communities must depend on state traffic advice.

The question may well be asked, what size city can properly utilize the full time of an experienced traffic engineer? The answer depends on topography, volume of through traffic, character of enterprises, and many other factors. Certain cities of 50,000 population could use a traffic engineer on full time.

Elements of Traffic Management

The three means of solving traffic problems are enforcement, engineering, and education. The traffic engineer, concerned with the entire structure of the traffic pattern, must determine practically (1) the various methods of operation, (2) the regulations at specific places, (3) the manner of application and the devices required.

Signs, signals, markings, islands, are logically tools of the traffic engineer. To use them efficiently, he must collect facts concerning accidents, the volume and speed of traffic, the origin and destination of vehicles.

The traffic enforcement official has the daily duty of seeing that the basic plan of traffic handling is carried out. Regulations must be enforced, direction and guidance must be furnished to traffic. Accident investigation and records must be made and kept. Arrests, summonses, warnings, convictions, are the equipment of enforcement.

The traffic educator must make all road users aware of the hazards and rules of driving. He must see that the children as well as the adults are instructed. He must make motorists interested in perfecting their driving ability. Finally, it is his job to develop a sound community attitude toward the entire traffic problem.

Responsibilities of the Community

Small communities seldom undertake broad traffic-improvement programs, but look to the state highway patrolman and the motor-vehicle bureau to keep order on the state highways passing through these

The real value and test of merit of Curb Stops, Corporation Stops and Goosenecks does not come when they are first installed — it is only after they have been installed for years under the ground that their true quality stands out.

More waterworks men use Mueller Goods than any other kind because they receive a higher degree of reliable service without breaking down or replacing — holding maintenance costs down to a minimum. Correctness of design, proper balance of metal formulae, accurate machining and testing are your assurance that Mueller Goods can be buried and forgotten for years and years.

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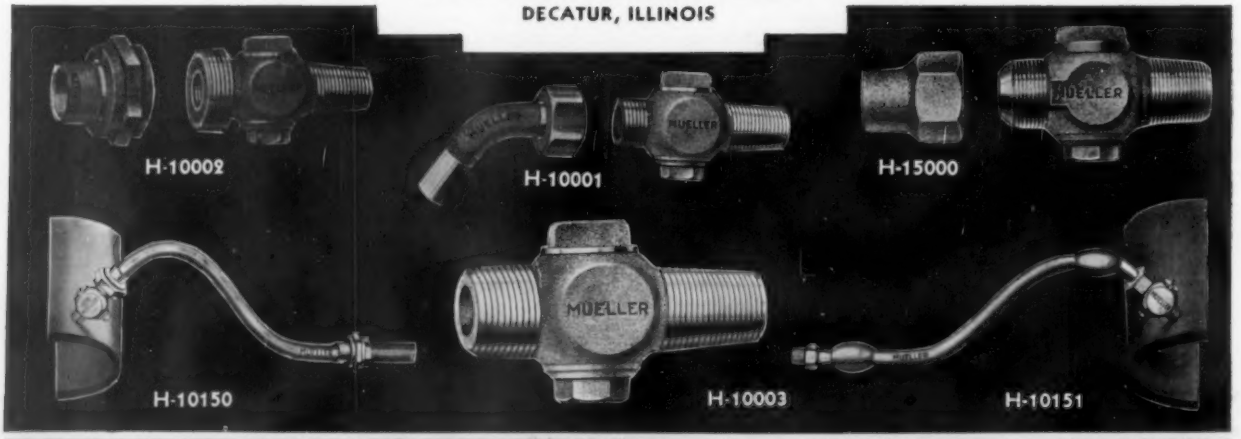


"MUELLER" — THE ACCEPTED STANDARD

communities. Where else can they turn for intelligent guidance in traffic regulation and traffic equipment? The proper routing of state highways is a vital factor in solving the traffic problem of the small community.

In the middle-sized town where traffic problems are more complex, the police department and the engineering department should work hand-in-glove on traffic matters. Someone in the police department should be assigned to specialize along traffic lines. An assistant engineer in the engineering department should work with this police officer. Working together, these two men, given public cooperation, money, and advice from the state traffic authority, can render valuable service to the community. The larger the city, the more these men will specialize on enforcement and engineering measures.

In the large city, we find a special branch of the police service with only traffic work to do, headed by a captain or inspector with city-wide powers to supervise and carry out all matters pertaining to traffic-law enforcement and the fundamental fact-finding and analysis pertaining thereto. The city traffic engineer now requires a corps of assistants to handle complaints and to solve difficulties.

What Is a Traffic Engineer?

Subject to the approval of the city council, the full-time traffic engineer should determine all operating practices on streets and highways. He should make continuing studies of all matters pertaining to traffic operation and management. Through the engineering approach, he should determine standards of application. He should advise the community as to where signals should be installed and how they should be operated; what streets should be made through-streets; the locations where street lighting is the indicated remedy for hazardous conditions. It should be his responsibility to study and understand fully the parking requirements of the community and to devise and suggest the logical treatment of parking problems. He should work with such city planning and engineering agencies as may exist, in order to formulate better plans for the location of new streets or roadways, the realignment of existing streets, the needed channelization islands to be installed at irregular intersections, and the prevention of awkward intersections which may be produced by new construction. He should furnish intelligent guidance to the community on where all traffic control devices should be installed, and see that they are maintained. This is the job.

Police Chiefs Praise Traffic Signals

By ROBERT A. CROSBY
Executive Secretary, Bridgeport Chamber of Commerce, Bridgeport, Conn.

THE chiefs of police of 10 cities of 10,000 to 15,000 population have furnished figures indicating that their unit investment in traffic-signal equipment amounts to 60 cents per capita and $1,270 per signalized intersection, with 100 additional signalizations needed.

Chief B. L. Miller, of Greenwood, Miss., states that in April this year five overhead red-orange-green lights were added, and concludes: "Traffic signals are necessary, and I wish Greenwood could install one at every intersection." Chief William J. McKee, of East Hartford, Conn., remarks that traffic signals are "very efficient, as accidents rarely occur when traffic signals are installed."

In the 12 months prior to the most recent installation of traffic signals at Hartford, Conn., on December 23, 1937, there were two accidents at the intersection; from January to August, 1938, there was one accident.

At Garland and Colonial streets, Orlando, Fla., signals were installed on January 28, 1938, and Chief W. M. Smith says that other intersections will be signalized as rapidly as finances permit, for, in addition to reducing the number of accidents when the signals are correctly adjusted, they regulate traffic and require fewer traffic officers.

St. Petersburg, Fla., will install signals at two or three intersections as soon as funds are available, since "they are valuable in controlling the normal flow of traffic without the use of a traffic officer."

At Winchester Square, Springfield, Mass., sixteen traffic lights with four timers, and magnetic detectors, all interconnected, were installed January 5, 1938, and Chief John J. Maloney says, "Additional signals will be installed if money is available."

Chief Ralph L. Southard of Ypsilanti, Mich., says that, using traffic signals, "no accidents will occur other than those caused by reckless or drunken driving if —left turns are eliminated, pedestrians walk with the signals, and the streets are kept free from ice."

TRAFFIC SIGNALS IN TEN CITIES

	Population	Money Invested	Intersections Signalized	Intersections Signals Needed
Greenwood, Miss...	11,123	$ 12,000	17	30
E. Hartford, Conn..	17,125	3,500	10[1]	2
Hartford, Conn....	164,072	200,000	80[2]	
Lexington, Ky.....	48,736	16,800	48[1]	
New Bedford, Mass.	112,597		2	20
Orlando, Fla.....	27,330	33,255	37[3]	10
St. Petersburg, Fla.	40,425	13,023	14[3]	5
Springfield, Mass..	149,900	68,000	37[4]	20
Tampa, Fla.....	101,161	7,000	29[3]	2
Ypsilanti, Mich....	10,143	5,000	8	2
	682,612	$358,578	282	91

[1] Eagle Signal Corp.; [2] Crouse-Hinds Co.; [3] Crouse-Hinds, and Eagle; [4] Crouse-Hinds, Eagle, General Electric Co., and Automatic Signal Corp.

Delivery-Hour Regulations in Busy Streets

OF 43 cities replying to an Institute of Traffic Engineers inquiry, 30 cities stated that they do not restrict deliveries to certain hours; but the other 13 reported that they do, as follows:

Baltimore, Md.—On certain streets, since June 18, 1937, deliveries have been prohibited on the inbound side of the street from 7:45 to 9:00 A.M., and in the outbound side from 4:45 to 6:00 P.M., every day except Saturday afternoon, Sundays and holidays.

Boston, Mass.—Since 1927, and revised slightly in 1939, between 9 A.M. and 5:30 P.M. in certain streets no delivery or collection of coal, fuel, oil, ice, barrels, kegs, empty cases or boxes; nor the collection of garbage, refuse or waste materials; nor any collection or delivery of goods or materials of any kind which requires a vehicle being backed to the curb, except as authorized by the Boston Traffic commission.

Chicago, Ill.—Ordinance for the Chicago Park District passed February 11, 1936; while in Chicago, an arrangement under police regulation whereby coal deliveries to boiler plants of large buildings in the central business districts are restricted during rush hours has helped.

Dallas, Texas.—Since November, 1935, vehicles used for delivery purposes are permitted to park free in metered spaces up to 10 A.M.

Fort Wayne, Ind.—Ordinance established zones under police regulation; 25 zones downtown.

Los Angeles, Calif.—Ordinances in effect 1½ years apply to certain east-west streets downtown. All loading and unloading only between 10 A.M. and 2 P.M.

Minneapolis, Minn. — Double parking of trucks prohibited on certain streets after 11 A.M. on week-days; coal must be delivered before 8 A.M. in business district.

Montreal, Quebec. — Since 1925, deliveries prohibited week-days 8 to 9:30 A.M. and 4:30 to 6:30 P.M.

Pittsburgh, Pa.—No deliveries 8:30 to 9:15 A.M. and 5 to 6 P.M. on week-days downtown, since February 9, 1938.

Providence, R. I. — Regulations restricting loading and unloading to certain hours have helped materially to reduce congestion. Some regulations in effect twelve years.

Seattle, Wash.—For five years, between hours of 5 and 6 P.M., except Saturdays, Sundays and holidays, unlawful to park except to permit passengers to board or alight.

Washington, D. C. — Since October, 1936, deliveries prohibited 8 to 9 A.M., except Sundays and holidays.

Wilmington, Del.—Since 1922, on one street, deliveries of materials by chutes across the sidewalk prohibited 10 A.M. to 10 P.M. on all days.

MATHIESON *HTH* FOR SAFE BEACHES

Says George R. Young, Village Manager, Village of Glencoe, Illinois: March 7, 1939

"You will be interested in our successful use of HTH on our Lake Michigan Beach . . . Two problems were involved: foot infections from the bacteria in the sand, and insects . . . HTH was tried, using a 2% solution. We were able with this solution sprayed on the sand to reduce the fly egg count from 800 per square inch to almost none. We eliminated bacteria and foot infection completely, so far as we were able to determine. We feel that the added satisfaction and confidence inspired in our Glencoe residents who use the beach was well worth while . . . In the past ten years we have enjoyed excellent service from your company."

• *Municipal Bathing Beach Glencoe, Illinois*

• *Filtration Plant Glencoe, Illinois Waterworks*

MATHIESON CHLORINE FOR SAFE DRINKING WATER

HTH is a dry, free-flowing chlorine carrier. 70% of its weight is chlorine available for killing bacteria and destroying odors and other objectionable contamination. Its germ-killing power is released rapidly, uniformly — requires no bulky equipment, no specially expert or experienced operator. Best of all HTH really does the job.

Glencoe is only one of the many villages, towns and great cities throughout the country that have found in HTH and Mathieson Chlorine the ideal solution of the problem of water purification, sewage treatment, beach and pool sanitation.

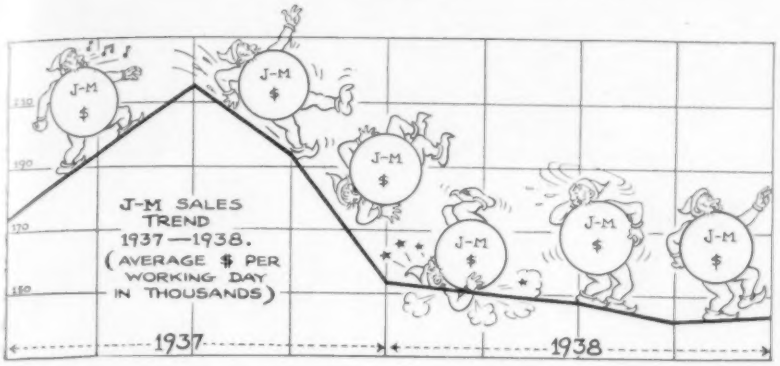
Mathieson Chlorine means a pure, dependable product — safe, trouble-free containers and valves — prompt delivery service. In addition you have available the full cooperation of Mathieson's expert technical staff.

THE Mathieson Alkali Works (INC)

60 EAST 42ND STREET, NEW YORK, N. Y.

LIQUID CHLORINE . . . HTH . . . SODA ASH . . . CAUSTIC SODA . . . BLEACHING POWDER . . . BICARBONATE OF SODA . . . AMMONIA, ANHYDROUS and AQUA . . . PH-PLUS (FUSED ALKALI) . . . DRY ICE . . . LIQUID CARBON DIOXIDE . . . GYPSUM PRODUCTS

Putting Laughs into Graphs



CHARTS and graphs are apt to be very solemn things—especially when they depict business trends during a depression period, or taxes during any period. A new note, in which a sense of humor injects optimism and courage into a corporate statement, has been struck in the Johns-Manville Corporation's annual report to employees, recently issued by Lewis H. Brown, President. As shown in the chart here reproduced, a gnome-like figure symbolic of the J-M Sales Dollar frolics through the report, telling the story of the company's business in simple and arresting fashion.

After declaring in the report that poor business conditions had made 1938 an unsatisfactory year, Mr. Brown sounded a more encouraging note:

"I believe that we made real progress in getting ready to go forward once general business conditions get better. It is not possible for me to predict when this turn will come; troubled conditions abroad and unsettled economic problems at home still obscure the outlook. But at this time, business is better than it was at the beginning of 1938 and I feel that our prospects for 1939 are somewhat brighter."

"Should the upward trend of sales which began last fall continue, it would seem reasonable to expect that the income of many J-M hourly-paid employees can be increased by a return to full-time work, and the program of restoring salary cuts to other employees can continue."

Cities Save with Central Equipment Divisions

SPECIAL equipment divisions which centralize the purchase and maintenance of municipal motor vehicles are saving money for several cities, according to a study of municipal public works procedures issued in February by Public Administration Service. Donald C. Stone, Executive Director, prepared the study. Among the cities taking steps toward special management for their "rolling stock" are Cincinnati, Ohio, Minneapolis, Minn., Milwaukee, Wis., Louisville, Ky., Charlotte, N. C., Troy, N. Y., Saginaw, Mich., and Kenosha, Wis.

Under a completely centralized equipment division, according to the study, operating departments rent the equipment, with or without drivers, from the equipment division, exactly as they would hire it from outside contractors. Even taxi service is supplied on a time and mileage basis in cases where cities have given up furnishing employees with city-owned automobiles for work.

Departmental officials requisition equipment as needed from a dispatcher in the equipment division who keeps continuous tab on all assignments. Refuse-collection vehicles, police patrol cars and other equipment used regularly on the same kind of work are permanently assigned to the departments using them. The rental rate set by the central equipment division on each piece of machinery covers all operation expense, including gasoline, oil, maintenance, depreciation, storage and division overhead. Departments pay by the month for services rendered and have a hand in recommending replacements and additional equipment needed.

Individual records analyzing the cost of each piece of city-owned motor equipment are kept by these central divisions. Forms show monthly tabulations of gas and oil tickets, mechanics' time on repair jobs, parts requisitioned and outside repair invoices. Once a year an inventory is made of all rolling equipment.

Distribution of Handbills

WAUKESHA, WIS.—An ordinance has been adopted to regulate the circulation of handbills in the city of Waukesha. The proposal declares it "necessary in the interests of public safety, health and welfare that the distribution of handbills, cards, booklets and other printed and advertising matter be regulated so as to prevent fire hazards, filthy and unclean conditions in public places and in and about private homes, and also to prevent such materials from clogging public drains."

Distributors are given the right to leave advertising matter in receptacles provided for the purpose by occupants; but it is stipulated that "no person engaged in distributing any of the aforesaid advertising matter shall cross any lawn or pass over or through any hedges or shrubbery."

Any resident who does not want bills left at the door may secure "No Handbill" signs at the City Hall at cost price.

Violators of the ordinance are subject to a penalty of $1 to $50 fine or imprisonment of not more than 30 days.

Newspapers and periodicals entered as second-class matter under Post Office regulations and printed matter of a religious or educational character are excluded from the provisions of the ordinance.

Recent City Manager Appointments

S. LEE GRANT, former Director of Public Works, has been appointed Acting City Manager of Winchester, Va., to succeed Arthur M. Field, who has resigned to become Director of the Industrial Division of the Memphis, Tenn., Chamber of Commerce.

G. H. Palmes, Manager of the Light and Power Department, was appointed first City Manager of Fort Collins, Colo.

Joseph E. English, former Director of Public Works, has been appointed City Manager of Trenton, N. J. He fills the vacancy created by Paul Morton's resignation to take a position in private business.

M. J. Wilson has replaced A. W. Cox as City Manager of Lapeer, Mich.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from March numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$4,025,000	Baltimore, Md., Emergency Relief	1.16	4.75 Avg.	1.06
300,000	Duluth, Minn., School and Refunding	1.37	5 Avg.	1.37
1,550,000	Hartford, Conn., School and Public Works	1.5	1-15 Ser.	1.46
450,000	Allentown, Pa., Funding and Improvement	1.75	8.5 Avg.	1.61
485,000	Middletown, N. Y., School	1.70	13.33 Avg.	1.68
250,000	Wilkes-Barre, Pa., Funding	2.25	13.33 Avg.	2.13
745,000	Bloomfield, N. J., School	2.25	15.66 Avg.	2.20
232,000	Columbus, Ga., Refunding	3	17.5 Avg.	2.35
186,760	Bellingham, Mass., Water	2.5	15.56 Avg.	2.43
235,000	Orange, N. J., General Funding	3	17.5 Avg.	2.82
120,000	LaGrande, Ore., Refunding Improvement	3	6.85 Avg.	2.87
200,000	Ketchikan, Alaska, General Improvement	3	7-7.85 O.-A.	2.91
150,000	Deer Lodge, Mont., Water Works	5.5	4.16-7.85 O.-A.	3.05
290,000	Orlando, Fla., Refunding	4	4.5 Avg.	3.26
1,092,000	Hoboken, N. J., General Funding	4	12.66 Avg.	4

1st FEATURE OF AN EFFICIENT, LOW-COST WATER SYSTEM

LOW INSTALLATION COSTS...

UNUSUALLY LIGHT IN WEIGHT, Transite permits the use of smaller trucks in carrying the pipe to the job. More linear feet can be carried per truckload—and, at the trench, Transite is easily handled by small crews without costly mechanical equipment.

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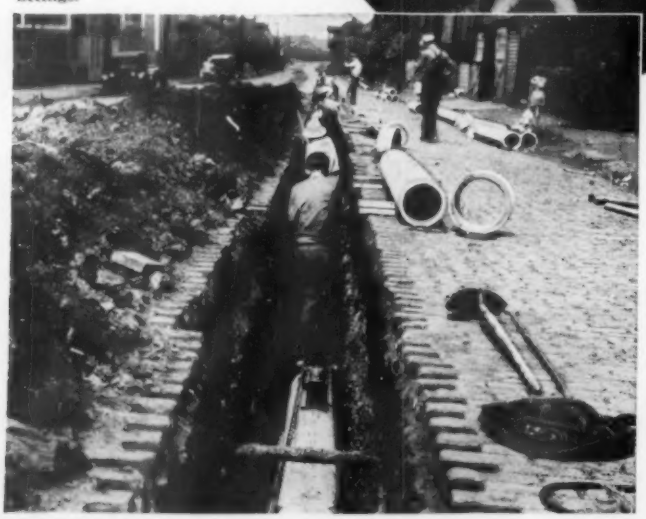
TRENCHING COSTS are held to a minimum, for Simplex Couplings do away with the need for large bell holes at joints. And the flexibility of these bottle-tight couplings permits laying straight lengths of Transite around curves without special fittings.

LOOKING for practical ways to cut water-line costs? Begin right at installation. Check the advantages of J-M Transite Pipe—you'll see how its light weight makes transportation to the job easy and economical—how its long lengths and simple assembly method speed up installation, reduce laying expense. These two features alone mean sizable reductions in the cost of your entire system.

And that's only the beginning of Transite's many savings. Made of asbestos and cement, Transite Pipe can never rust or tuberculate—its high flow coefficient of C=140 keeps pumping costs permanently low. And, because this modern, durable pipe is immune to electrolysis and highly resistant to soil corrosion, maintenance costs are practically zero.

Yet, with all these advantages, Transite Pressure Pipe costs no more than ordinary pipe. For details, write for brochure TR-11A. And if you are interested in efficient, low-cost sewerage systems, ask for the Transite Sewer Pipe Brochure, TR-21A. Address Johns-Manville, 22 East 40th Street, New York, N. Y.



RAPIDLY INSTALLED—Laying crews can install Transite Pipe as fast as the trench is opened. Simplex Couplings are assembled cold, require no costly heating equipment on the job. Skilled pipe fitters are unnecessary—ordinary crews can assemble Transite rapidly and efficiently with a simple chain puller.

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Fort Wayne Housing Plan Analyzed

To the Editor of THE AMERICAN CITY:

Considerable interest has been shown in connection with a so-called Fort Wayne Plan proposed by the Federal Housing Administration. That agency has been going about the country showing a motion picture of the house and describing its program. As a result, some local authorities are considering the Fort Wayne Plan as a cheap substitute for government housing.

It has been difficult to gather concrete information on the plan because it is in the nature of an experiment, and policy is being altered from time to time by FHA. At present, the plan is briefly the following:

The "Fort Wayne house" is a prefabricated frame house put together by relief labor. It is supposed to last for twenty years. It calls for the erection of these privately owned houses on tax-exempt single lots owned by individual landlords. These landlords permit the erection of the house on their land for a period of five years, during which they are free from paying the land tax.

In the main, the objections to the plan, as presently formulated, are that it calls for no large-scale planned community, but proposes to dot all parts of cities with temporary houses, fast deteriorating and degenerating into slum spots. The houses are said to have a useful life of only twenty years, but all past experience indicates that cheap housing built for short periods is likely to remain for forty or even fifty years in the interests of economy. Certainly, if this plan is a substitute for public housing, it presents the greatest challenge to the movement as yet offered.

The United States Housing Authority has been trying to build up parts of cities, replan their arrangement and evolve some program of lasting value. The FHA plan not only fails to supplement it, it nullifies it.

The "Fort Wayne Plan" makes no provision for the simultaneous removal of substandard dwellings, and the spotting of sections with these wooden houses may result in the re-slumming of America. Furthermore, the real subsidies are completely hidden in the FHA plan. For example, there is no provision for various architects' fees, or for cost of shifting of the buildings from time to time as they are moved, nor are any reserves set up for the additional deterioration which must result from their transfer from lot to lot.

Yet, despite all the hidden subsidies and all the objections, the Fort Wayne house will rent for about 30 per cent more than those under the present USHA program. I have tried to gather some facts from which to make a comparison of the financial factors of both plans. The following table sets forth those differences briefly in a side-by-side comparison.

	FORT WAYNE PLAN	USHA PLAN
Life of building	20 years	60 years
Cost of building (per family)	$1,560	$2,360
Over-all cost	$1,760 (with land lease only and without costs of tenant selection, architects' fees, interest during construction, etc.)	$3,150 (including land and site improvement, tenant selection cost, architect and financing fees)
Slum clearance	None	One unit eliminated for each one built
Location	Scattered	Large self-sufficient areas
Type of construction	Frame	Fireproof or semi-fireproof
Land tenure	Leasehold only	Fee
Labor employed	WPA	Union labor
Subsidies	WPA and hidden fees of architects, cost of moving building, etc.	$110.25 annually per family (maximum)
Families provided for	Relief	Relief and non-relief
Rents per room per month	$10.80	$8.25
Rent including utilities	$17.50	$12.50
Minimum family income of tenants required	$650.00	$450.00

For the last fifty years we have had all sorts of "substitutes" for public housing—all kinds of efforts to save money here and there. We have had "rehabilitation schemes," "restrictive legislation," "limited-dividend corporations," etc. In the meantime, all European countries, with decades of experience behind them, have found the traditional housing program of the USHA the only satisfactory method. The newest substitute is the "Fort Wayne Plan." Characteristically, it has fired the imagination of Americans. Characteristically, it may disrupt all the fine work that has been done to date unless full light is thrown upon it. Unquestionably, all propaganda on the plan should be curtailed until it has been very carefully examined. In the first flush of enthusiasm for what looks like a real discovery at first glance, an "experiment" is evolving into a "solution."

CHARLES ABRAMS.

New York, March 14, 1939.

As NAHO News Sees It

SERIOUS questions as to whether municipalities generally would be wise to adopt the so-called Fort Wayne Plan of low-cost housing are raised also in an analysis of the plan in the February 28 issue of *NAHO News*, the bulletin of the National Association of Housing Officials. In its issue of September last (page 103) THE AMERICAN CITY published an illustrated item regarding the Fort Wayne experiment, but without any attempt to evaluate it. Public officials or civic organizations flirting with the idea would do well to consider Mr. Abrams' comments in the foregoing letter and to read the *NAHO News* analysis before reaching a decision. It is pointed out:

"The Fort Wayne technique spots houses often in blighted areas where it is sometimes doubtful that they will be able to withstand, even for twenty years, the effects of the surrounding dilapidation and decay. Those who are considering the adoption of the Fort Wayne plan must decide, therefore, whether they wish to use housing as a means of either reclaiming blighted and slum areas on a large-scale basis and developing stable communities on vacant sites, or whether they will be satisfied with producing a certain number of low-rent dwelling units without regard to the use of large-scale housing as an important tool in city planning and rebuilding.

"Consideration . . . from the planning point of view also involves some decision regarding the desirability or justification of encouraging the holding of land for speculative purposes. Clearly this is a question of policy, not of fact. The unique method of land acquisition employed in the Fort Wayne Plan can succeed only as long as an owner is convinced that he can secure a substantially better profit from the use or sale of his land at a later date than he can secure at the present time. The encouragement of this expectation, especially for property in blighted areas, would seem to be questionable public policy. . . .

"It is understood that the Fort Wayne Plan as it has been applied has not usually resulted in actual demolition of substandard housing. There would not be any valid objection to this aspect of the Fort Wayne Plan if the local government through its regular exercise of police power eliminated all such housing as could be vacated by the continued operation of the Plan. . . .

"The USHA program attempts the difficult task of producing low-rent housing and at the same time attacking the basic cause of the housing problem, low incomes, by attempting to pay wage scales sufficiently high to raise general income levels among building mechanics. The Fort Wayne Plan frankly recognizes the availability of WPA labor, utilizes the services of these men on Government payrolls, and while it achieves lower direct construction costs, does little, if anything, to stimulate normal employment at going wages and thereby relieve in part the necessity of continuing the WPA itself. The actual value of the donations of WPA labor in construction operations is very difficult to determine."

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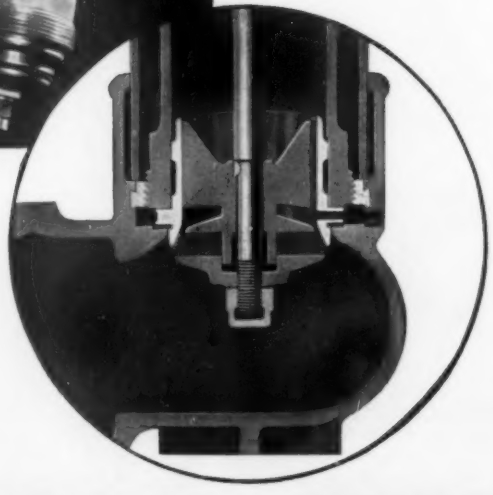

Upper picture shows how the entire Mathews barrel is removed through the protection case. At right, the compression type main valve which remains tight when broken.

Remember that hydrants exist for one thing only—fire protection. Unless they can be depended upon to prevent water from flowing when you don't want it, and to deliver it when you do want it, you don't have fire protection.

The day a runaway truck smashes a hydrant, you'll be glad you specified Mathews. For whether its stem is bent or broken, no water can escape. The Mathews main valve is *below* its seat, held shut by water pressure, preventing destructive and costly flood. At the same time, Mathews hydrants can be repaired in fifteen minutes simply by unscrewing the entire barrel, lifting it out through the protection case, and inserting a new barrel.

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Parks—Conflict of Laws

ILLINOIS.—*Decatur Park District v. Becker*,* 14 N. E. 2d, 490 (Supreme Court, April, 1938).—A statute provided for the creation of park districts with power to condemn land for park (including playground) purposes. The governing body of such park district brought eminent domain proceedings for the acquisition of land for a playground. The land was located in a residence "A" district under the zoning ordinance enacted by the City Council, and such ordinance did not permit public parks within such a zone.

The question in the case, therefore, was whether the park district, in its selection of park locations, was governed by the zoning ordinance. The Court held that the zoning ordinance was enacted under one statute and the park district was granted its powers of condemnation by another statute, and there was nothing in either statute to indicate that an ordinance under the former should prevail over official action under the latter.

It was stated in the opinion of the Court that under the zoning ordinance parks would have to go into industrial or business zones; but the validity of the zoning ordinance was not discussed.

The case may indicate the advisability of a statute, such as exists in Ohio, under which the park district board would have had to submit the question of the location of the proposed playground to the City Planning Commission.

* From the *News Letter* of the American Society of Planning Officials.

Planning Commission — Submission of Action of Legislative Body to Commission Before Final Action

KANSAS.—*Barker v. Kansas City*, 146 Kansas, 347 (July, 1937*).—Litigations upon statutory or charter requirement that public improvements be submitted to the planning commission are few and far between. This phase of planning is, however, quite as important as zoning or subdivision control, and decisions upholding such requirement of submission to the planning commission are fortunate events.

The topical indexing or digesting of such decisions seldom discloses that planning law was involved, and it is usually only by accident that one discovers that fact. This accounts for the circumstance that this note is concerned with a case decided as long ago as July, 1937.

The City Council decided to acquire five pieces of property as public parking places, and enacted legislation for acquiring the land by eminent domain and for levying special assessments. The action was to enjoin the carrying out of this legislation.

The Court stated that a public parking place is a legitimate purpose for the exercise of the power of eminent domain, but held that the procedure adopted in this legislation contained a number of defects invalidating the same, one of these being the failure to submit the ordinance and the proposed locations of the parking places to the Planning Commission. The Court therefore granted the injunction.

EDITOR'S NOTE.—To the same effect is the Massachusetts case of *Whittemore v. Town Clerk of Falmouth*, 12 N. E. 2d, 187 (Supreme Court, December 28, 1937) reported in our Notes for April, 1938.

* From the News Letter of the American Society of Planning Officials.

Private Covenants — Zoning Ordinances

KENTUCKY.—*Goodwin Bros. v. Combs Lumber Co.*, 120 S. W. 2d. 1024 (Court of Appeals, October 25, 1938).—When the lots in the Ransom Subdivision of Lexington were sold, the deeds contained several restrictive covenants concerning the location, character and minimum cost of residences which might be erected thereon; and although there is no express prohibition of the use of lots for business purposes, such a restriction may perhaps be implied. For many years these restrictions have been disregarded; and the neighborhood has changed from a residential to a business character. The Zoning Commission of the city has also made these lots a business district. Held that although the zoning provisions did not destroy the restrictive covenants, they were evidence of a substantial transformation of the district into a commercial district. This recognition by the city of the change coupled with other evidence makes it appear conclusively, in the opinion of the Court, that the change in condition has been so great in the subdivision as clearly to neutralize the benefits of the restrictive covenants and defeat their purpose. Hence the Court refuses to enforce these covenants.

Housing—Slum Clearance —Eminent Domain

MONTANA.—*Rutherford v. City of Great Falls*, 86 Pas. 2d, 656 (Supreme Court, January 21, 1939).—Legislation for the purpose of eradicating slums and substituting safe and sanitary dwellings is for a public purpose, for which public money may be spent, and private property taken; and the power of eminent domain may be granted therefor. The property devoted to such housing may be exempted from state and local taxation. A city may loan its credit for these purposes and make donations.

Legislation similar to that in Montana on this subject has been enacted in thirty or more states and Porto Rico, and been upheld in those jurisdictions in which it has been attacked in court; and these facts have greatly influenced this Court in its decision.

EDITOR'S NOTE.—For cases in other states to the same effect, see these Notes for September, October and November, 1938, and March, 1939.

Gasoline Service Stations

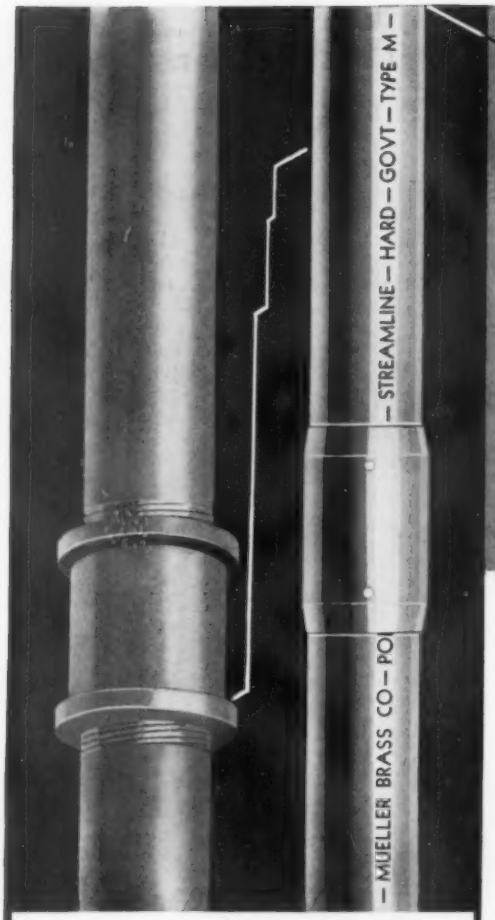
NEW JERSEY.—*Diller v. Mayor and Council of Borough of Stone Harbor*, 3 Atl. 2d, 872 (Supreme Court, January 28, 1939).—Almost the entire borough of Stone Harbor is zoned for residential or business uses, and in such zones gasoline service stations are forbidden. Less than five blocks are open to such stations. Diller asked for a permit for such a station at a point in the business zone where there would be no interference with traffic, and where it is logical to locate such a building. Held that the refusal to grant the permit is capricious and arbitrary, and results in a deprivation of reasonable use of Diller's property. The restriction does not bear a substantial relation to the public health, safety, morals or general welfare.

EDITOR'S NOTE.—The fact that the zoning ordinance in a given community under the circumstances existing there makes it difficult or impossible to find a suitable location for a given use is considered by the courts in deciding whether, as to a person seeking a permit, the ordinance is free from arbitrariness and discrimination. See in this connection *Reynolds v. Barrett*, 68 Pac. 2d, 266, reported in our Notes for September, 1937.

Zoning Permit—Delay Pending Change

NEW JERSEY.—*Vine v. Zabriskie, Superintendent of Buildings of Village of Ridgewood*, 3 Atl. 2d, 886 (Supreme Court, February 1, 1939).—While Vine's petition for a permit for an apartment house was pending, an amendment to the zoning ordinances was passed forbidding such structures at that location. Held that the adoption of this amendment was unreasonable, and void as to Vine; and Vine was not obliged to appeal from the decision of the building inspector refusing the permit, to the Board of Adjustment, but could bring mandamus at once against the inspector, for the issuance of his permit. The Court refers to the earlier case of *Dorsey Motors, Inc. v. Davis*, 13 N. J., Misc. 620 at 625, as authority for its ruling.

EDITOR'S NOTE.—For similar cases, see our Notes for October and November, 1938.



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Court Decisions Affecting Municipalities

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for injury to motorist through collision in nighttime with sidewalk curb at bridge bottleneck driveway (Florida Supreme Court: *Panama City v. Eytchison*, 184 So. 490).

City held not liable where pedestrian slipped on ice that formed shortly before accident (Minnesota Supreme Court: *Johnson v. City of Redwood Falls*, 282 N. W. 693).

City held not liable where pedestrian fell over building material piled in street, because he failed to use due care for own safety (Illinois Appellate Court: *Wildt v. City of Chicago*, 17 N. E. 2d, 612.)

City held liable for death of spectator at municipal fireworks display in park, although the display was managed by an independent contractor (Ohio Court of Appeals, Hancock County: *Harris v. City of Findlay*, 18 N. E. 2d, 413).

City held not liable for injury to pedestrian struck by car deflected from course on colliding with traffic "button" in street (Missouri Supreme Court: *Blackburn v. City of St. Louis*, 121 S. W. 2d, 727).

City held not liable for fall of pedestrian on slippery sidewalk in park (Georgia Court of Appeals: *Harvey v. Mayor and Aldermen of City of Savannah*, 199 S. E. 653).

City held not liable for injury to patient in municipal hospital not shown to have been operated for profit (Georgia Court of Appeals: *City of Brunswick v. Barrett*, 199 S. E. 901).

City and its airport manager held liable for injury to airplane in collision with automobile on runway of airport, if motorist's act in leaving car on runway should have been foreseen (California District Court of Appeal: *Pignet v. City of Santa Monica*, 84 Pac. 2d, 166).

City held not liable for injury to WPA workers on municipal works project (California District Court of Appeal: *Taylor v. City of Los Angeles*, 84 Pac. 2d, 242).

Bond Issues

Statute requiring city to accept its bonds and interest coupons in payment of improvement liens held to limit right of exchange to lien debtors and not to permit others to speculate in liens by exchanging bonds bought at a discount for liens subject to foreclosure at face value (Florida Supreme Court: *Luers v. Kuykendall*, 185 So. 448).

Proposal submitted to electors to issue bonds for civic center to house city offices held sufficient to include auditorium, stadium, memorial hall, art gallery, etc., information being readily available to voters as to just what the project covered (Montana Supreme Court: *Lloyd v. City of Great Falls*, 86 Pac. 2d, 395).

Civil Service

Fire Department held improperly dicharged for day's absence without leave where charge previously had been dismissed after hearing (Michigan Supreme Court: *Lilienthal v. City of Wyandotte*, 282 N. W. 837).

Condemnation Proceedings

City held not liable for damages sustained by property owner through changing building plans to conform to city's condemnation proceedings that were later abandoned by city, in absence of statute fixing liability (California Supreme Court: *Gibson Properties Co. v. City of Oakland*, 83 Pac. 2d, 942).

Contracts

Contract to provide electric plant to be paid for out of plant earnings held void for failure to invite competing bids (Minnesota Supreme Court: *City of Bemidji v. Ervin*, 282 N. W. 683).

City held not liable for engineering services rendered after electric plant project was approved by electors but abandoned, where plant was to be paid for wholly out of its earnings; a distinction being made where services are rendered preliminary to submission of question to electors (Iowa Supreme Court: *Burns & McDonnell Engineering Co. v. Iowa City*, 282 N. W. 708).

Bidder on sewer job held not entitled to return of deposit on attempted withdrawal of bid because of claimed mistake in calculating bid (Mississippi Supreme Court: *City of Hattiesburg v. Cobb Bros. Construction Co.*, 184 So. 630).

City held not to have waived rights under street contractor's maintenance bond through having supervised and accepted work (Kentucky Court of Appeals: *White Construction Co. v. City of Madisonville*, 121 S. W. 2d, 55).

Health Regulations

Municipal power to regulate sale of food in interest of public health recognized, but ordinance fixing closing hours for certain food stores held void for exempting restaurants and kindred establishments (California Supreme Court: *Justesen's Food Stores v. City of Tulare*, 84 Pac. 2, 140).

Licenses

Ordinance requiring boarding houses to obtain permit from Board of Health upheld (New York Court of Appeals: *Baddour v. City of Long Beach*, 18 N. E. 2d, 18).

Ordinance requiring permit for house-to-house canvassing upheld (New Jersey Court of Appeals: *Town of Irvington v. Schneider*, 3 Atl. 2d, 609).

Municipal Funds

Town held not entitled to defend suit to compel payment of warrant on ground of want of funds if such want is due to improper disbursement of funds (Colorado Supreme Court: *Town of Morrison v. Burke*, 84 Pac. 2d, 461).

Official Bonds

Under statute, municipalities held bound for premium cost of official bonds (Illinois Appellate Court: *Barber v. City of Evanston*, 17 N. E. 2d, 722).

Official Misconduct

Indictment against municipal officers held to sufficiently charge an unlawful conspiracy to misappropriate funds to persons not entitled to same (New Jersey Supreme Court: *State v. Ellenstein*, 2 Atl. 2d, 454).

Ordinances

City recorder held not entitled to refuse to perform statutory duties under initiative and referendum law concerning prospective ordinances on ground that ordinances would be unconstitutional (Utah Supreme Court: *Coleman v. Bench*, 84 Pac. 2d, 412).

Courts held not permitted to go beyond terms of ordinance to ascertain movitive for adopting it, in determining its validity (Tennessee Supreme Court: *Madison v. City of Maryville*, 121 S. W. 2d, 540).

Ordinance held not invalid because broader than its caption, constitutional requirement as to acts of general assembly being inapplicable (Tennessee Supreme Court: *Madison v. City of Maryville*, 121 S. W. 2d, 540).

Police Measures

Picket walking on sidewalk held not to violate ordinance forbidding so *standing* on sidewalk as to impede pedestrians (Texas Court of Criminal Appeals: *Fierro v. State*, 121 S. W. 2d, 597).

Ordinance forbidding distribution in streets of posters, etc., upheld (Massachusetts Supreme Judicial Court: *Commonwealth v. Nichols*, 18 N. E. 2d, 166).

Public Utilities

Ordinance creating board of managers for municipal water plant held not to empower board to employ superintendent without authority or approval given by city council (Arkansas Supreme Court: *Gladson v. Wilson*, 120 S. W. 2d, 732).

Charter provision governing fixing of gas rates held not repealed by subsequent general act of Legislature (United States Circuit Court of Appeals, Fifth Circuit: *City of El Paso v. Texas Cities Gas Co.*, 100 Fed. 2d, 501).

Rewards

Municipalities held without implied power to offer rewards for apprehension of criminals (North Carolina Supreme Court: *Madry v. Town of Scotland Neck*, 199 S. E. 618).

Salaries

Custom of city employees to take two weeks' vacation with pay held not to justify paying employee additional salary because he did not take a vacation (Kentucky Court of Appeals: *Rawlings v. City of Newport*, 121 S. W. 2d, 10).

Employee held not to have waived right to full amount of salary fixed by law by accepting less (Michigan Supreme Court: *Kaminski v. Cowan*, 282 N. W. 902).

Special Assessments

City held liable for loss resulting from its misapplication of funds derived from special assessment payments (Indiana Supreme Court: *Read v. Beczkiewicz*, 18 N. E. 2d, 789).

Streets

Vacation of part of street in relocating railroad tracks upheld although abutters thereby were deprived of access to their property from one of two directions (Michigan Supreme Court: *Green v. Grand Trunk Western Railroad Co.*, 282 N. W. 890).

Contract whereby city sought to permit abutter to improve and use portion of street space to exclusion of public traffic held void (Illinois Supreme Court: *Ginter-Wardein Co. v. City of Alton*, 17 N. E. 2d, 976).

Abutter held entitled to award for damages resulting from raise of street grade (St. Louis Court of Appeals: *Lechner v. City of St. Louis*, 121 S. W. 2d, 242).

Operator of commercial establishment held not entitled to enjoin construction of curb along middle of four-lane highway, though involving longer travel by his prospective patrons in reaching his place (Arkansas Supreme Court: *City of Fort Smith v. Van Zandt*, 122 S. W. 2d, 187).

Taxation

Property held by testamentary trustees for future use by city, but not presently so used, held not tax-exempt (Connecticut Supreme Court of Errors: *Klein v. City of Bridgeport*, 3 Atl. 2d, 675).

State sales tax imposed on water sold by city upheld (Arizona Supreme Court: *City of Phoenix v. Conway*, 85 Pac. 2d, 56).

Motor-vehicle wheel tax ordinance upheld against contention by express company that it invalidly attempted to regulate public utilities (Illinois Supreme Court: *City of Chicago v. Hastings Express Co.*, 17 N. E. 2d, 576).

Traffic Regulations

Ordinance making automobile registration plates prima facie evidence that owner parked car in violation of parking ordinance upheld (Michigan Supreme Court: *People v. Kayne*, 282 N. W. 218).

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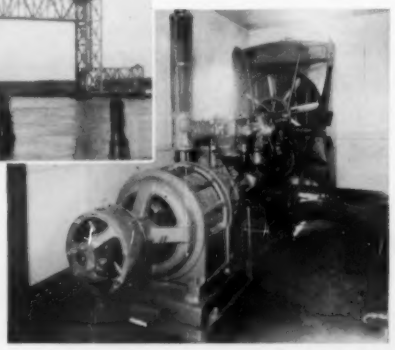

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Municipal and Civic Publications

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Utilities

Ownership and Regulation of Public Utilities—the January issue of The Annals. American Academy of Political and Social Science, 3457 Walnut Street, Philadelphia, Pa. 1939. *Paper,* $2.00; *cloth,* $2.50.

Like the other *Annals*, this set of articles is written from different points of view and by persons with varying interests in the different topics covered. According to the Foreword, the outstanding problem that it attacks is "that of achieving honest, efficient, competent, and economical management of public utilities, whether by private or public ownership and operation, or by possible combinations of private and public ownership, under comprehensive and constructive public regulation and control, in the public interest." The first part deals with power utilities—electric, water, communications, street railways; the second part with transportation utilities—railroad, maritime, highway, air. Papers which relate particularly to municipal utilities are: "Sources and Costs of Capital Required to Finance Public Ownership," "Rates in the Electric Industry under Municipal Ownership," "Government Ownership and Operation of the Electric Industry," "Public Ownership of Public Utilities in the United States" (reprints obtainable from John Bauer, The American Public Utilities Bureau, 280 Broadway, New York), "Public and Private Ownership of Water Supply Utilities," "The Case for Private Ownership and Operation of Street Railways."

Street Lighting

"Advanced Street Lighting Practices.—This booklet shows by text and picture how better street-lighting technique developed out of engineering knowledge has tended steadily to increase the mounting heights of luminaires, to reduce glare and achieve uniformity. More experienced engineers are now designing more effective luminaires with efficient Holophane refractors which permit the use of these high mounting heights without sacrifice in light delivery to useful areas. An object is seen at night (1) by its surface detail; (2) in outline against a lighter or darker background; (3) by its shadow rather than by itself; (4) by glint from its surface. Each of these methods of discernment has its place. In business districts, the predominance of pedestrian traffic and the need for cheerful atmosphere require such illumination intensity and light distribution as will make details visible. Thoroughfares, on the other hand, carry a predominance of vehicular traffic at fairly high speed. While nearby cars need to be seen clearly, it is not essential that distant objects be viewed in full detail; but it is essential that their presence be detected. Silhouette vision at night permits discernment of distant objects as a dark area against a lighter background. Thus the street lighting must provide a reasonable degree of surface brightness. Objects are viewed in silhouette against this bright background. When traffic is very heavy, a high degree of vertical illumination is desirable also. In residence streets and outlying areas, objects may be seen in detail because of the bright lights, or they may be detected by silhouette, or by shadow, or by glint effects. It is the job of reflectors and refractors in each of the above types of illumination, to utilize the light in the most efficient manner, and this booklet also describes these devices. Those systems, whether of upright ornamental luminaires or pendent luminaires, which were installed before the present traffic conditions developed, are obviously inadequate; but they frequently can be revamped to modern standards at moderate cost. Even in upright luminaires, internal refractors may be installed, and this measure alone will make the present system much more effective. Bowl refractors added to existing pendent luminaires will step up their efficiency sharply. Dome refractors added to existing globe installations either upright or pendent will make more effective use of light already available. (Apply for free copy to Holophane Co., Inc., 342 Madison Ave., New York.)

Urban Government

Urban Government—Volume I of the Supplementary Report of the Urbanism Committee of the National Resources Committee. 1939. *v + 303.* 50c. *Apply to Superintendent of Documents, Washington, D. C.*

This is the first of two supplementary volumes giving data and information which were collected in the course of preparing "Our Cities—Their Role in the National Economy," but not included in that volume. In five parts, it presents, like other publications of the National Resources Committee, a comprehensive, over-all picture which sweeps across the whole breadth of the land.

The development of urban government in America is analyzed in relation to its functions and powers, its finances and controls, urban areas and authorities, techniques and structures, personnel and politics. This opening division of the report is followed by a full survey of Federal Relations to Urban Governments, with an analysis of problems involved and recommendations for their solution. Trends in Federal Reporting of Urban Information are presented, and development and functions of associations of cities and of municipal officials are discussed extensively. Part V, on Public Safety, contains sections on Rural-Urban Differences in Crime, Distribution of Urban Crime, Crime Control, and Fire Menace, with a Summary and Recommendations.

Public Works

The Management of Municipal Public Works.—By Donald C. Stone. Public Administration Service, Chicago, Ill. 1939. *344 pp., including 19-page index.* $3.75.

Although the science of management has been developed to a high degree in the field of industrial production, it is only recently that it has received any great consideration in the field of public administration. This book contains an analysis of the factors involved in the efficient management of the increasingly significant and complex branch of municipal government, the administration of public works. As well as the methods of control for achieving effective management, it describes means of measurement for determining whether these methods have achieved the ends in view. It contains not only general principles, but, based like other publications of the Service on actual installations of practices in various cities in the country, it presents procedures and techniques illustrated by numerous forms and charts. Chapter headings are as follows: Management Essentials; Personnel Administration; Standards and Measurements in Public Works Management; Public Works Planning and Budgeting; General Accounting as It Affects Public Works; Public Works Cost Accounting; Purchasing and Supply Management; Equipment Management and Accounting; Engineering Administration; Public Works Maintenance and Construction; Refuse and Sewage Disposal; Property Management; Public Relations; Social Benefits from Public Works.

Housing

"Low Rent Housing," the 1939 Report of the State Board of Housing, contains besides the usual account of the Board's activities of the past year an estimate of the amount and cost of new housing needed in the state; a brief description of the housing amendment—unique in the country—that was made to the constitution last year; and the Board's proposal for legislation necessary to put the amendment into effect. The rest of the report contains: a description of existing public and limited-dividend housing in New York State; financial statements, data on operating, maintenance costs and vacancies of the fourteen projects under the Board; summary data of these and public housing projects; housing legislation and legal decisions in 1938; report of the conference of municipal housing authorities; and digests of reports of housing authorities in the state. 91 pp. (Apply to State Board of Housing, Albany, N. Y.)

School Buildings and Grounds

The American School and University—A Yearbook Devoted to the Design, Construction, Equipment, Utilization, and Maintenance of Educational Buildings and Grounds—Eleventh Annual Edition. American School Publishing Co., 470 Fourth Ave., New York. 1939. *606 pp.* $2.50.

The value of this volume increases each year as the importance of the physical background in the educational process becomes increasingly recognized. Written by authorities and experts in the field, The American School and University contains again an abundant store of information on details of school-building planning, equipment and maintenance.

The first section gives a brief general survey of the school-building program in this country. A section on Design and Construction of Buildings contains articles on the planning and maintenance of rural schools, on color in the educational environment, and on classrom skylighting; discussions of heating and plumbing standards; an annotated bibliography on school and college buildings. Other sections deal with Operation and Maintenance; Landscape Design and Development; Classroom—Library——Auditorium; Commercial Department— Administrative Office, including an article on Modernizing Child Accounting Records; Cafeteria—Home Economics—Dormitory; Laboratory Design and Equipment; Shop Planning and Equipment; Transportation Service. In view of the widespread interest in winter sports, recreation departments should take special note of a 36-page symposium containing chapters on the design and construction of such facilities as toboggan chutes, downhill ski trails, ski jumps, ski tows, ice skating rinks and ski shelters and lodges. The volume contains its usual convenient reference lists of: architects for educational buildings; landscape architects for university and school projects; college, university, normal school and junior college presidents; heads of private schools; superintendents of schools in cities of 5,000 population or over; superintendents of Catholic parochial schools. Aids available to local school boards from state departments are listed. All material is indexed by subject and author, and a classified index to manufacturers' products and services is included. Illustrations, plans and diagrams add to the usefulness and interest of this stimulating book.

Municipal Accounting

"Municipal Audit Procedure" is the revised edition of "Tentative Outline of a Suggested Procedure for a Detailed Municipal Audit," published in 1934, by the National Committee on Municipal Accounting. It is a guide for the auditing of accounts of municipalities and other public bodies, applicable to post-audits performed by state audit agencies, independent private accountants, or independent municipal auditors. Its main section is concerned with the principles and scope of the procedure to be followed in making a general, complete audit. Supplementing this, Appendix I outlines the detailed steps of a sample audit program. Elements of the audit covered are revenues and receipts, expenditures, assets, liabilities, sinking-fund requirements and sinking-fund reserves, surplus and surplus reserves. Other sections deal with the agreement or contract between municipality and auditor; the audit report; and general principles of municipal accounting. 54 pp., including index. 50c. (Apply to National Committee on Municipal Accounting, 1313 E. 60th St., Chicago, Ill.)

County Government

The *National Municipal Review* is again devoted, in the February issue, to County Government. Articles cover the relation of county to city, state and Federal government; and give accounts of improvements in government in specific counties. A bibliography on county government is included. 86 pp. 50c. (Apply to National Municipal League, 309 E. 34th St., New York.)

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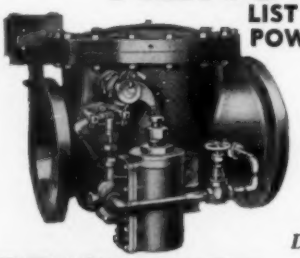

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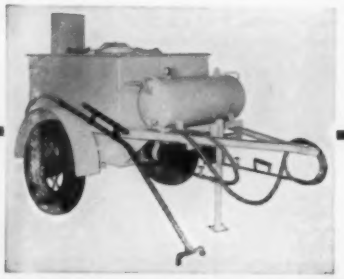

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Urbanism

The City—A Study of Urbanism in the United States.—By Stuart Alfred Queen and Lewis Francis, Professor of Sociology and Associate Professor of Geography, respectively, Washington University. McGraw-Hill Book Co., Inc. 1939. $4.00 *from* THE AMERICAN CITY.

This is a study of the geographical aspects of the city—the site, natural resources and climate as they affect the location and growth of cities and of various traits within a given city; and of the sociological aspects—the groups, institutions, customs, traditions, attitudes and relations among the people, as they develop in the city and in turn affect the development of the city. It is concerned particularly with methods of studying the city, and, through these methods with prediction and control of the future of our cities.

Part I describes "The Rise of Cities and of Urbanism," including some of the principal factors which have affected this rise. Part II analyzes "Urban Institutions and Folkways"—domestic, economic, educational, leisure, religious, political institutions and folkways, and social work and public health. Part III, "Distributive and Selective Aspects of the City," analyzes patterns within the city—types of communities, neighborhoods, ethnic groups, blighted areas, physical movement and social mobility. Part IV, "People in the City," treats of urban populations, the "urban personality," personal crises and maladjustments. The last section, "Prediction and Control," has chapters on the city's life cycle, city and regional planning, social planning.

Land-Value Taxation

A pocket-sized reference book, "Why Rents and Rates Are High," presents 600 cases in the towns and country of Great Britain, of excessive costs paid for land because of land monopoly. They are given as evidence in support of the theory of Henry George that values which are given to the land by the community—which by its presence and governmental services creates demand—are unjustly taken by the individual landowner. The Henry George philosophy contends, of course, that taxes should be removed from improvements on the land, and levied on the value of the land.

The 222 local authorities in Great Britain which have passed resolutions requesting powers to rate land values are listed. The progress of land-value taxation in countries in which it is in force is briefly described, and the pros and cons of the argument for this kind of taxation are outlined. 231 pp., including index and bibliography. 1s. net. (Apply to United Committee for the Taxation of Land Values, Ltd., 34, Knightrider St., St. Paul's, London, E.C.4, England.)

Safety

"Every year about 5,000 children are killed and 175,000 are injured on the streets and highways of the Nation."

One of the most important approaches to the solution of this problem is dealt with in "Selecting Safest Routes for Elementary School Children," which gives "detailed procedure for the collection, compilation, and use of pertinent information in selecting the safest routes for children to travel in walking to and from school." Criteria for selection are described in full. The principal data that are necessary in judging which routes are safest are: street layout maps; information on name, age, grade, and location of residence of pupils; vehicle volume; type and location of safety measures at intersections. 42 pp. (Apply to Division of Social Research, Works Progress Administration, Washington, D. C.)

Planning

The New York State village, town and city laws relating to planning and zoning have been consolidated, brought up to date as of May 1, 1938, and published in three separate pamphlets by the Division of State Planning. The principal subjects which the regulations cover in each case are zoning, the planning board, the master plan and official map, approval and record of plats. 17 + 16 + 16 pp. respectively.

The Division has also issued "Suggested Subdivision Regulations for Town Planning Boards," based on statutes enacted at the 1938 session of the Legislature. 16 pp. (Apply to Executive Dept., Division of State Planning, 353 Broadway, Albany, N. Y.)

Planning

City Planning—Why and How.—By Harold MacLean Lewis. Longmans, Green and Co., New York. 1939. *xxi* + 257 *pp.* $2.50 *from* THE AMERICAN CITY.

This volume fills the crying need for a short, easily read, non-technical book which explains to the average citizen what city planning is, the advantages it will bring him in his every-day life, and his large responsibility for the sound planning of his community. The first part, "Why Plan?" analyzes the reasons for planning and the results which good planning should bring about in relation to the citizen's place of work, his home site, the local schools, the daily trip to work, the bringing of materials into the city, a trip out of town, a motor ride, public services. The second part, "How Plan?" analyzes the means which city planning uses to bring about the objectives mentioned. It covers: legislation, population studies, transportation and highway plans, zoning, recreational facilities, planning for schools, civic centers, subdivision regulation.

Five radio broadcasts given in January by members of the Des Moines City Plan and Zoning Commission, as part of the publicity program of the Commission, have been published under the title, "The Des Moines City Plan—What It Has Done, What It Can Do, to Guide the Development of a Finer City Here in Des Moines." Written with a clarity and directness that would appeal to the average citizen, the papers explain the reasons for a city plan, its aims, scope, and advantages, and particularly the citizen's responsibility for its final pattern. One of the talks discusses the reasons for the high tax rate of Des Moines and possibilities of lowering it through proper planning of the city. Des Moines population trends and the advantages of planning the city according to these trends is the topic of two of the other talks. 41 pp. (Apply to the City Plan and Zoning Commission, Des Moines, Iowa.)

Tax-Delinquent Land

An analysis of "Tax Delinquent Land in California" has been made by the California State Planning Board with the help of an Advisory Committee of recognized authorities in the field. The report summarizes research on various aspects of the question, which has been carried on in the past by numerous agencies and organizations; explains in non-technical, layman language the complicated legal provisions governing tax-delinquent land in California; gives "facts and findings" analyzing the amount and status of this land in California; and present a "plan for the more efficient, systematic classification and management" of these lands. The pamphlet is an example of easily-read, to-the-point reporting. Clearly outlined and summarized, significant points can be grasped almost at a glance. 89 pp. $1.00. (Apply to Supervisor of Documents, 214 State Capitol, Sacramento, Calif.)

Housing

In the pamphlet "A Plan to Encourage Private Enterprise in the Field of Housing and Slum Clearance," the Merchants' Association of New York has published its recommendations for enabling legislation to carry out the 1938 housing amendment to the state constitution. Accepting public housing as a partial solution of the low-rent housing problem, the present bulletin is concerned mainly with the Association's recommendations for slum clearance by private housing of any rent level which can be put on a paying basis. The pamphlet defines briefly what it feels should be the powers, privileges and limitations of "public utility housing corporations" (in which equity investment would consist principally of capital subscribed in cash), "local district improvement corporations" (in which equity would be represented principally by shares of stock given to owners and mortgagees in exchange for present claims), and limited-dividend corporations. It defines also the terms and conditions under which the power of eminent domain should be used by these state-regulated private corporations, and the powers and scope of the regulatory body (the State Housing Board or other body) which will administer the law. 11 pp. (Apply to The Merchants' Association of New York, 233 Broadway, New York.)

Government Spending

Symposiums which present opinions of persons with differing points of view on the same subject are not uncommon. *Fortune* magazine has gone one step farther with the publication in the March issue, of a "Synthesis of Opinion at the First Fortune Round Table," which presents the conclusions—the common denominator—which eleven men of conflicting points of view agreed to, on the controversial subject of "The Effects of Government Spending Upon Private Enterprise," and a proposed policy of public spending in the future. The participants included five business leaders, a judge, a farmer, a labor leader, an engineer, a writer and a professor of economics. Where agreement was not unanimous, individual points of view are indicated in footnotes or appendices.

Opposite in purpose from the popular American system of debate—which accentuates differences of opinion—the successful development of methods such as this for widening the area of agreement, indicates a virility at the heart of democracy, and suggests the possibility of implementing public opinion for a less cumbersome and unwieldy working of democratic government. 24 pp. Reprint, 10c. (Apply to Fortune Round Table Editor, Time and Life Building, Rockefeller Center, New York.)

Fire Prevention and Control

The George-Deen Act of Congress in 1936 provides Federal funds and advisory service, administered through the state, for vocational training courses of various kinds, of which training for firemen is one. A "Suggested Program for Standard Fire Service Training" has been drawn up by The Educational Committee of the International Association of Fire Chiefs in cooperation with The Vocational Division of the United States Office of Education. This is the first of a series of bulletins, subsequent issues of which will include actual instruction and reference manuals on subjects outlined in this general program. The first part of the bulletin outlines the organization recommended for carrying on the program. The second part describes the four types of training courses to be included in the program: (1) for instructors; (2) group classes—class and drill sessions for both elementary and advanced courses, technical and promotional training courses; (3) the annual fire college and regional fire schools; and (4) fire department drill schools. 18 pp. 25c. Free to members. (Apply to International Assn. of Fire Chiefs, 24 W. 40th St., New York.)

City Government

The Institute of Public Administration has issued the fourth edition of the brief and easily read brochure, "Governmental Organization within the City of New York," revised in accordance with the provisions of the new charter effective January 1, 1938. The largest city in the United States, with a population of 7,500,000 inhabitants and an area of 323 square miles, is divided into five counties and five boroughs, with coinciding boundaries. Four levels of political authority, each of which is described in the pamphlet, take part in governing the city—the municipal, borough, and county governments, and certain agencies of the state. A revised chart, showing the structure of the government, is included. (See December, 1938, issue of THE AMERICAN CITY, p. 70.) 18 pp. 25c. (Apply to Institute of Public Administration, Columbia University, 302 E. 35th St., New York.)

Real Estate Subdividing

A brief bulletin, "Excess of Subdivided Land a Major Problem in New York City and Its Environs," has been issued by the Regional Plan Association of the city. The extent of excessive subdivision in the region is analyzed, and the relatively small amount of new residential area that will be required to accommodate the increased population in 1960 is calculated. The bulletin points out that a heavy and unjust tax burden falls on owners of already improved property from the cost of servicing vacant or unused lots in these excessive subdivisions, and from the tax arrears which accumulate against such lots. It is suggested that most of the excess plottage that will never be used because of its poor quality or location should be allowed to revert to its status of *agricultural or non-urban land.* 8 pp. (Apply to the Regional Plan Association, Inc., 400 Madison Ave., New York.)

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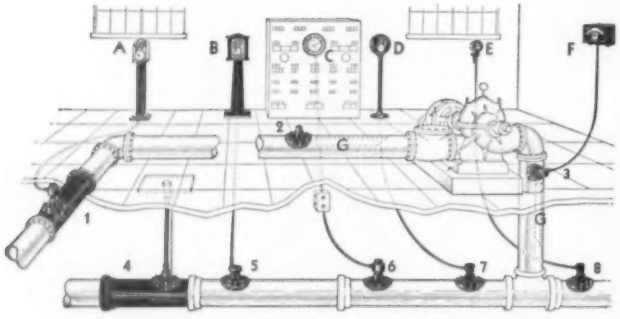

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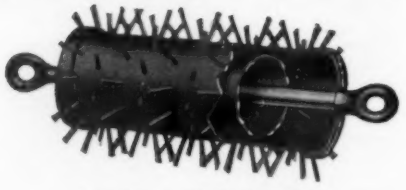

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Other Reports Received

BILOXI, MISS.—Report, Annual Convention, National Association of State Auditors, Comptrollers and Treasurers, Nov. 15-18, 1938. 140 pp. Apply to Joseph T. Ferguson, State Auditor, Columbus, Ohio.

CHICAGO, ILL.—The Annual Appropriation Bill, 1939. 159 pp. 1½c postage; send to Municipal Reference Library.

DETROIT, MICH.—Annual Report, City Plan Commission, 1938. 27 pp.

FREDERICKSBURG, VA.—Annual Report, 1938. 62 pp.

HARTFORD, CONN.—Annual Reports, Board of Park Commissioners, and Division of Public Cemeteries, 1938. 53 pp.

HENNEPIN COUNTY, MINN.—Financial Statement, 1938. 48 pp.

LOS ANGELES, CALIF.—"Tax Payers' Guide"—Schedule of Tax Rate and Legal Requirements, 1938. 125 pp.

MANSFIELD, MASS.—Annual Report, Town Officers, 1938. 163 pp.

NEW ORLEANS, LA.—"New Orleans Today—Another Proof of Progress." January, 1939. 5 pp. Apply to Robert S. Maestri, Mayor.

SALEM, MASS.—Annual Report, Park Department, 1938. 36 pp.

SUFFOLK COUNTY, N. Y.—Report, Suffolk County Mosquito Extermination Commission. 1938. 31 pp. Apply to the Commission, County Court Bldg., Riverhead, Long Island, N. Y.

TALLAHASSEE, FLA.—Annual Reports, 1938 and 1939. 118 pp.

TORONTO, CANADA.—Annual Report, Assessment Commissioner, 1938. 41 pp.

WEST READING, PA.—Annual Report, 1938. 44 pp.

YOUNGSTOWN, OHIO.—Sinking-Fund — Annual Report, 1938. 24 pp.

Conventions -- When and Where

Meeting is annual convention unless otherwise designated

APRIL 10-12.—MEMPHIS, TENN.
American Water Works Association—Kentucky-Tennessee Section. (Peabody Hotel.) Sec.-Treas., H. D. Schmidt, 420 6th Ave., Nashville, Tenn.

APRIL 10-12.—FAYETTEVILLE, ARK.
Arkansas Water and Sewage Works Conference. (Engineering Bldg.) Sec., Harrison Hale, Univ. of Arkansas, Fayetteville, Ark.

APRIL 12-14.—TORONTO, ONT.
American Water Works Association—Canadian Section. (Royal York Hotel.) Sec.-Treas., Dr. A. E. Berry, Dept. of Health, Toronto, Ont.

APRIL 12-14.—KANSAS CITY, MO.
Missouri Association of Public Utilities. (Hotel Muehlebach.) Asst. Sec., Jesse Blythe, 101 W. High St., Jefferson City, Mo.

APRIL 14-15.—GREAT FALLS, MONT.
American Water Works Association—Montana Section. (Park Hotel.) Sec., Herbert B. Foote, State Dept. of Health, Helena, Mont.

APRIL 17-19.—SPARTANBURG, S. C.
American Water Works Association—Southeastern Section. (Cleveland Hotel.) Sec.-Treas., B. P. Rice, 422 State Office Bldg., Columbia, S. C.

APRIL 20-22.—URBANA, ILL.
American Water Works Association—Illinois Section. (Urbana-Lincoln Hotel.) W. D. Gerber, P. O. Box 232, Urbana, Ill.

APRIL 21.—SALEM, N. J.
South Jersey Association of Water Superintendents. (Salem Country Club.) Sec., Walter Spencer, 2707 Bethel Ave., Merchantsville, N. J.

APRIL 25-26.—INDIANAPOLIS, IND.
American Water Works Association—Indiana Section. (Antlers Hotel.) Sec., J. A. Bruhn, Box 855, Indianapolis, Ind.

APRIL 27-28.—DAYTON, OHIO.
American Water Works Association—Ohio Section. (Van Cleve Hotel.) Sec., T. R. Lathrop, State Dept. of Health, Columbus, Ohio.

APRIL 27-29.—SEATTLE, WASH.
Pacific Northwest Regional Planning Commission. (Olympic Hotel.) Consultant, R. F. Bessey, 220 Federal Court House, Portland, Ore.

APRIL 29-MAY 1.—ASHEVILLE, N. C.
National Association of Tax Administrators. (Battery Park Hotel.) Exec. Sec., Albert Lepawsky, 1313 E. 60th St., Chicago, Ill.

MAY 1-4.—WASHINGTON, D. C.
Chamber of Commerce of the United States. Sec., Ralph Bradford, 1615 H St., N. W., Washington, D. C.

MAY 3-5.—COLUMBIA, MO.
Missouri Municipal Association. (Tiger Hotel.) Exec. Sec., George A. Spencer, 406 Guitar Bldg., Columbia, Mo.

MAY 4-6.—MIAMI, FLA.
American Water Works Association—Florida Section. (Alcazar Hotel.) Sec., J. R. Hoy, 404 Hildebrandt Bldg., Jacksonville, Fla.

MAY 4-5.—CUMBERLAND, MD.
Maryland-Delaware Water and Sewerage Association. Sec., A. W. Blohm, 2411 N. Charles St., Baltimore, Md.

MAY 8-13.—CHICAGO, ILL.
National Fire Protection Association. M'ng Dir., Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

MAY 11-13.—TACOMA, WASH.
American Water Works Association—Pacific Northwest Section. (Winthrop Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 15-17.—BOSTON, MASS.
National Conference on Planning. (Hotel Statler.) Joint annual conference of American Society of Planning Officials, American Planning and Civic Association, National Economic and Social Planning Association and American Institute of Planners. Conference Dir., Miss Elisabeth H. Herlihy, Room 24, State House, Boston, Mass.

MAY 15.—WEST SPRINGFIELD, MASS.
New England Sewage Works Association. Spring meeting. (Springfield Country Club.) Sec.-Treas., L. W. Van Kleeck, State Dept. of Health, Hartford, Conn.

MAY 22-23.—COLUMBIA, MO.
Missouri Association of Municipal Utilities. (Tigers Hotel.) Sec.-Treas., W. J. McCarroll, Fulton, Mo.

JUNE 5-7.—NIAGARA FALLS, N. Y.
Conference of Mayors and Other Municipal Officials of the State of New York. (Hotel Niagara.) Exec. Sec., William P. Capes, City Hall, Albany, New York.

JUNE 8-10.—ATLANTIC CITY, N. J.
Eastern Association of Fire Chiefs. (Haddon Hall.) Sec., Charles E. Clark, Box 217, Wayne, Pa.

JUNE 11-15.—ATLANTIC CITY, N. J.
American Water Works Association. (Hotels Ambassador and Chelsea.) Sec., Harry E. Jordan, 22 E. 40th St., New York.

JUNE 12-14.—TORONTO, ONT.
Canadian Public Health Association. (Royal York Hotel.) Gen. Sec., Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 13-16.—MILWAUKEE, WIS.
Smoke Prevention Association. Sec., Frank A. Chambers, 1411 City Hall Square Bldg., Chicago, Ill.

JUNE 15-17.—BUFFALO, N. Y.
American Public Welfare Association. (Statler Hotel.) Dir., Fred K. Hochler, 1313 E. 60th St., Chicago, Ill.

JUNE 16-18.—NIAGARA FALLS, N. Y.
Community Chests and Councils, Inc. (Niagara Falls Hotel.) Exec. Vice-Pres., Allen T. Burns, 155 E. 44th St., New York.

JUNE 20-22.—PROVIDENCE, R. I.
New England Association of Fire Chiefs. Sec., John W. O'Hearn, Watertown, Mas.

JUNE 26-28.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. (Nittany Lion.) Sec., L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 28-30.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JULY 5-13.—STOCKHOLM, SWEDEN.
International Federation for Housing and Town Planning. Sec., Mrs. Paula Schafer, rue Cantersteen 47, Shell Bldg. 608, Brussels, Belgium.

JULY 17-22.—OGDEN, UTAH.
National County Officers' Association. Pres., George F. Breitbach, Court House, Milwaukee, Wisconsin.

AUGUST 13-19.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 832 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 14-17.—CEDAR RAPIDS, IOWA.
League of Iowa Municipalities. Sec.-Treas., Frank G. Pierce, Marshalltown, Iowa.

AUGUST 24-25.—DULUTH, MINN.
American Water Works Association—Minnesota Section. (Duluth Hotel.) Sec.-Treas., Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

SEPTEMBER 12-14.—KANKAKEE, ILL.
Illinois Municipal League. Sec., A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

SEPTEMBER 12-15.—MONTREAL, QUE.
New England Water Works Association. (Hotel Windsor.) Sec., Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

SEPTEMBER 13-15.—LANSING, MICH.
American Water Works Association—Michigan Section. (Olds Hotel.) Sec., M. N. Gerardy, Water Board Bldg., Detroit, Mich.

SEPTEMBER 18-21.—OAKLAND, CALIF.
League of California Municipalities. Sec., Richard Graves, 223 City Hall, San Francisco.

SEPTEMBER 18-19.—OLD POINT COMFORT, VA.
League of Virginia Municipalities. Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

SEPTEMBER 20-23.—SAN FRANCISCO, CALIF.
International Association of Fire Chiefs. (Fairmont Hotel.) Sec., James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

OCTOBER 5-6.—READING, PA.
American Water Works Association—Four States Section. (Berkshire Hotel.) Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary Dist., Hyattsville, Md.

OCTOBER 9-11.—PITTSBURGH, PA.
American Public Works Association. Exec. Dir., F. W. Herring, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—SAN FRANCISCO, CALIF.
International Association of Chiefs of Police. (Fairmont Hotel.) Exec. Vice-Pres., William P. Rutledge, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—PROVIDENCE, R. I.
International Municipal Signal Association, Inc. (Providence-Biltmore Hotel.) Sec., Irvin Shulsinger, 7 E. 42d St., New York.

OCTOBER 9-13.—BOSTON, MASS.
National Recreation Association, (Hotel Statler.) Sec., 315 Fourth Ave., New York.

OCTOBER 11-13.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. Sec., Earl L. Waterman, Univ. of Iowa, Iowa City, Iowa.

OCTOBER 16-19.—DALLAS, TEXAS.
American Water Works Association—Southwest Section. Sec.-Treas., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

OCTOBER 16-20.—CINCINNATI, OHIO.
National Association of Public School Business Officials. Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 16-20.—ATLANTIC CITY, N. J.
National Safety Council. M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 17-20.—PITTSBURGH, PA.
American Public Health Association. (William Penn Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 20-21.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. (Claridge Hotel.) Sec.-Treas., H. N. Lendall, College of Engineering, Rutgers Univ., New Brunswick, N. J.

OCTOBER 25-28.—SAN FRANCISCO, CALIF.
American Water Works Association—California Section. Sec.-Treas., Carl M. Hoskinson, Div. of Water, Sacramento, Calif.

CHICAGO INSTALLS 19,690 FEET OF 36"-30" MONO-CAST CENTRIFUGAL PIPE

Rapid delivery of approximately 20,000 feet of 36" and 30" Mono-Cast Centrifugal Pipe featured the installation of new water transmission mains in Lincoln Park, Chicago, Ill. Contract required speedy construction to help relieve unemployment in Chicago during winter months. Acipco's unexcelled production facilities for large-diameter pipe helped contractor keep ahead of schedule—another example of Acipco's dependable service. Write for literature.

AMERICAN CAST IRON PIPE CO.
BIRMINGHAM, ALA.

New York City Chicago Kansas City Minneapolis
Dallas Los Angeles San Francisco Pittsburgh
Cleveland

IN WATER PLANTS
Raw Water Aeration
Quick Chemical Mixing
Coagulant Mixing
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Filtered Water Aeration

IN SEWAGE PLANTS
Activated Sludge Aeration
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Mixing for Chemical Precipitation

"Jung Suction" AERO-MIX AERATOR-MIXER

A type and capacity to fit every existing or contemplated plant.

Gravity—Rotary
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Vogt Mfg. Co. Inc. P. O. BOX 1122 LOUISVILLE - - KY.

YOU can have a stock like this!

Get a UNIVERSAL "all-purpose" type Concrete Pipe Machine, designed for expanding profits.

Makes quality pipe, in all standard sizes, that assures top production by major economies in time, labor and material.

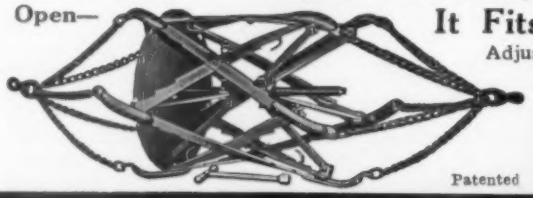
"UNIVERSAL" EQUIPMENT means
"UNIVERSAL" PROFITS.
Write for Bulletin

UNIVERSAL Concrete Pipe Co. Columbus OHIO

EXPANDING ROOT CUTTER & SEWER CLEANER

Open and in action removing roots and caked sediment like this.

Open—



Patented

It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. Nappanee, Ind.

The EDDY Valve

The Eddy Valve has a number of distinctive features which it will pay you to study. For example, the gates are free to revolve on the trunnions, so as not always to seat in the same position.

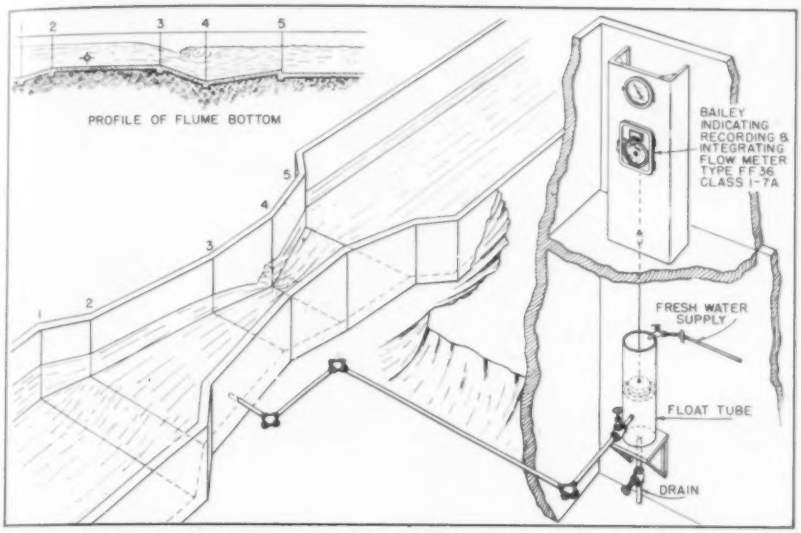
Write us for further details.

Also manufacturers of the well-known Eddy Hydrant

EDDY VALVE COMPANY
WATERFORD NEW YORK
Representatives
Jas. B. Clow & Sons, Chicago, Ill.
National Cast Iron Pipe Co., Birmingham, Ala.

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings


PROFILE OF FLUME BOTTOM
BAILEY INDICATING RECORDING & INTEGRATING FLOW METER TYPE FF 36 CLASS I-7A
FRESH WATER SUPPLY
FLOAT TUBE
DRAIN

TYPICAL INSTALLATION OF A BAILEY FLOW METER FOR A PARSHALL VENTURI FLUME

New Meter for Flows Through Open Channels

With the increasing use of open flumes for the effluents of sewage-treatment plants and similar channels at the entrance to water purification plants, there is an increasing demand for meters which will measure the flow in open channels. Bailey Meter Co., 1050 Ivanhoe Road, Cleveland, Ohio, has announced a new meter for measuring the flow of liquids through open channels by the use of a weir notch or venturi flume. Basically, the register is a float-operated device with the float motion transmitted to the indicating or recording system through a cable, sheave, gear and cam mechanism with sensitive operating characteristics. By varying the shape of the cam and installing the proper gears, it is possible to use this register with weir notches of all types and with the Parshall venturi flume, which is becoming increasingly popular for open channel primary metering.

The flow record is given in terms desired on a uniformly graduated chart 11 inches in diameter, and the integrating mechanism shows the total flow in terms of gallons, pounds or cubic feet on a six-unit cyclometer type counter. If desired, the register can be furnished with indicators of the dial or sector type.

By means of the recently developed Bailey Synchro-Meter Telemetering system, the same mechanism can be used in the event that the receiving element is to be located at some distance from the measuring channel or flume. In such installations, three conductors are required between the transmitting and receiving elements, and the use of No. 12 wire will permit the receiver to be located approximately one mile from the transmitter. Alternating current at a frequency of 25, 50 or 60 cycles may be used, and the system is independent of voltage or frequency variations.

Dresser Couplings Used on New Water Lines

Materials have been ordered and work initiated on the construction of a new 20-24-inch ID water line for the city of Spartanburg, S. C., consisting of a 20-inch ID (20½-inch OD) force-main approximately 16,000 feet long from the Pacolet River pumping station to the Clear Water Reservoir, and a 24-inch ID (24½-inch OD) gravity supply main, approximately 39,800 feet long, from the reservoir to the city of Spartanburg. Steel pipe is used, ¼-inch thick, furnished by The American Rolling Mill Co., of Middletown, Ohio, and joined with approximately 1,200 Dresser pipe couplings, manufactured by Dresser Mfg. Co., Bradford, Pa.

The city of Sandusky, Ohio, Department of Engineering and Construction, has work proceeding rapidly on a new 42-inch ID (43-inch OD) steel intake extending from a point in Lake Erie approximately 3,500 feet from the Cedar Point Peninsula, through and under Lake Erie, the Peninsula, Sandusky Bay and Big Island, a distance of 8,018 feet to the proposed new water-works treatment plant. The job is being completed with pipe manufactured by Taylor Forge and Pipe Works and joined with approximately 150 Dresser couplings.

Organization Changes at Cochrane Corporation

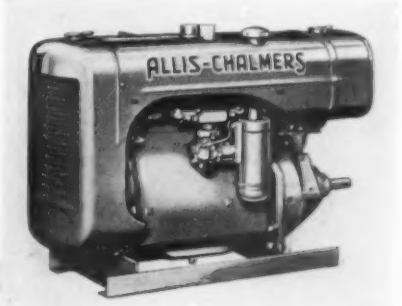
Cochrane Corporation, 17th Street and Allegheny Avenue, Philadelphia, Pa., announces the appointment, on February 1, of O. H. Woolford as Sales Manager for Specialties and Meters. In the future all advertising and sales promotion work will be handled by S. D. Distelhorst, who joined the Cochrane Corporation in February after serving on the editorial and business staffs of several trade publications.

Small Power Unit Added to Allis-Chalmers Line

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced the addition of a new Model B-15 to its line of gasoline power units. This new unit consists of the engine which has proved so successful in the company's Model B tractor, mounted on a substantial welded angle iron base, and complete with radiator, hood, removable louvered side plates, fuel tank, clutch, clutch housing and pulley shaft. It is a 4-cycle, 4-cylinder gasoline engine with a bore of 3¼ inches, a stroke of 3½ inches and 116-cubic-inch displacement, has removable cylinder liners, high-tension magneto ignition, a heavy-duty oil bath air cleaner, oil and fuel filters and other modern features designed to safeguard the owner's investment and assure long life and economical operation.

The B-15 develops a maximum of 19 brake horsepower at its normal governed speed of 1,400 rpm. At 1,800 rpm it develops 22 brake horsepower maximum. Its maximum torque is 74 pounds feet developed at 1,100 rpm. The new unit measures only 31-1/16 inches high, 17⅝ inches wide, and the length, including starting crank, is 52¾ inches.

The B-15 will furnish economical power for gravel washing and screening plants, asphalt plants, portable concrete mixers, pumps and other equipment requiring 15 to 18 continuous horsepower.



MODEL B-15, LATEST ADDITION TO THE ALLIS-CHALMERS GASOLINE POWER UNIT LINE

WESTINGHOUSE LUMINAIRES BRING

VISIBILITY AT NIGHT

To Long Beach, California

SAFETY LIGHTING!

Long Beach, Cal., joins in the nationwide movement to reduce night traffic deaths. Westinghouse Reflectolux Sr. luminaires, 136 in all, now provide adequate visibility for automobile drivers on American Avenue. These asymmetric-type units use 10,000-lumen incandescent lamps.

EXPERIENCE PROVES REFLECTOLUX PRINCIPLE

Realizing that VISIBILITY AT NIGHT is a vital element in urban traffic safety, the City of Long Beach, Cal., has installed 136 Westinghouse Reflectolux Sr. luminaires on American Avenue. Thus, Long Beach joins the roll of American cities that have adopted adequate street lighting to save lives.

The first requirement of public safety is for a lighting system to halt the rise of nighttime traffic deaths. Reflectolux fulfills that requirement.

Glareless light from a concealed light source, high intensities of light from aluminum reflecting surfaces finished by the Alzak process and accurate symmetric or asymmetric light control . . . all of these features are available in Reflectolux luminaires by Westinghouse. Experience has proved that wherever installed on a carefully engineered basis, the Reflectolux principle is literally SAVING LIVES WITH LIGHT.

For complete details call your local Westinghouse Lighting Specialist; or address Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, O.

Westinghouse Reflectolux Sr.—Designed for Incandescent, Combination Mercury-Incandescent or Sodium Vapor Lamps.

Westinghouse Lighting Equipment

A Portable Floodlight for General Use

To provide simple floodlighting for basement workshops, garages, gardens and recreational areas, as well as for protection against night prowlers, the Goodrich Flexolite may be quickly and easily attached to horizontal or vertical surfaces by means of an adjustable bracket and a two-screw mounting plate.

The Flexolite is a weatherproof fixture finished with three coats of vitreous-fired porcelain enamel. With universal adjustment, a flood of light can be directed exactly where it is needed for indoor and outdoor illumination. It is offered in two sizes to accommodate 100-, 200- or 300-watt medium base lamps, equipped with rubber cord, plug, and Underwriters' approved medium base socket. Catalog sheets may be obtained from the Goodrich Electric Co., 2900 North Oakley Avenue, Chicago, Ill.

Pittsburgh-Des Moines Loses Sales Executive

James L. Dailey, Contracting Manager for the Pittsburgh-Des Moines Steel Co. in the Missouri and Kansas territory, died in Des Moines, Iowa, February 25, 1939. Mr. Dailey was 47 years of age, a graduate of Civil Engineering from the University of Michigan, and had been with the Pittsburgh-Des Moines Steel Co. since the fall of 1914. He had served in the Drafting Room, the Construction Department and, eventually, the Sales Department. Mr. Dailey was widely known in the water-works field which he served.

Motor Grader Attachments Featured at Road Show

At the San Francisco Road Show The Austin-Western Road Machinery Co., Aurora, Ill., displayed three new attachments mounted on a standard all-wheel drive and steer 99 Motor Grader. The first was a rear-mounted roller that is raised and lowered by hydraulic power, measures 6 feet long by 30 inches in diameter, and is built in three sections for operation as a 2-, 4- or 6-foot roller as desired. Each section, which may be filled with water, provides an estimated compression of 200, 250 or 470 pounds per lineal inch, with a 6-, 4- and 2-foot width roll respectively. When the roller operates, the rear drive wheels of the motor grader are elevated above the ground, yet there is ample traction and power in the front wheels of the 99 to meet all rolling requirements.

The second attachment was a two-gang disc harrow for front-end attachment, ahead of the wheels. It is operated hydraulically and can be lowered to a maximum depth of 6 inches below the front tires. It consists of eighteen 20-inch diameter discs spaced 4 inches apart and arranged in inverted V formation so that material travels toward the center from each side. The harrow covers a maximum width of 70 inches, and each section has three angle adjustments of 5 degrees, 10 degrees and 15 degrees.

THE NEW PORTABLE GOODRICH FLEXOLITE

The third attachment was a power-driven rotary broom mounted just ahead of the blade, raised and lowered hydraulically from the cab, and doing a thorough job of cleaning the road surface. It measures 8 feet long by 26 inches in diameter and is driven by a special hydraulic motor.

Full details concerning these attachments for the 99 can be obtained from the manufacturer.

Water-Works Feeder for Aqua Ammonia

The use of aqua ammonia, while approximately half as expensive as ammonia gas, has until now been avoided in most water-works plants owing to the difficulties of handling it. Proportioneers, Inc., 9 Codding Street, Providence, R. I., has developed an Amm-O-Feeder to handle the job. This unit consists of an electrically or hydraulically operated pump, either constant rate or variable rate according to the flow of water, and constructed of materials resistant to ammonia. Its design is such that the fumes of the ammonia gas are prevented from escaping, thus removing one of the greatest objections to the use of this chemical.

Like its companion unit, Chlor-O-Feeder, it has a manually variable stroke length by means of an adjustable eccentric, and four speeds by means of belt changes on four-step cone pulleys on the constant rate and venturi-controlled machine, and by means of a micrometer stroke adjustment on the hydraulically operated Amm-O-Feeder controlled from mechanical water meters.

Proportioneers, Inc., states that one machine can adequately feed the proper dose to flows of a few gallons per minute or to flows of 50 million gallons per day, and that the other advantages of this machine are that the first cost is cut in half, the chemical cost is cut in half, the repair costs are negligible, it is very flexible and simple in operation, and will inject against pressures up to 200 pounds per square inch. The Amm-O-Feeder is available as one unit or in duplex, triplex, or multiplex feeders for proportioning a number of different chemicals.

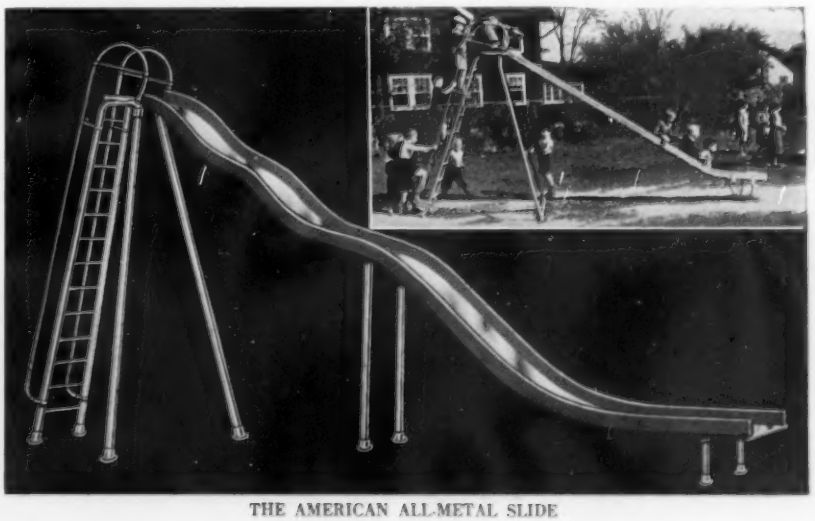
All-Metal Play Slide

A fine all-metal slide is manufactured by American Playground Device Co., Anderson, Ind., which the manufacturer claims will last twenty years.

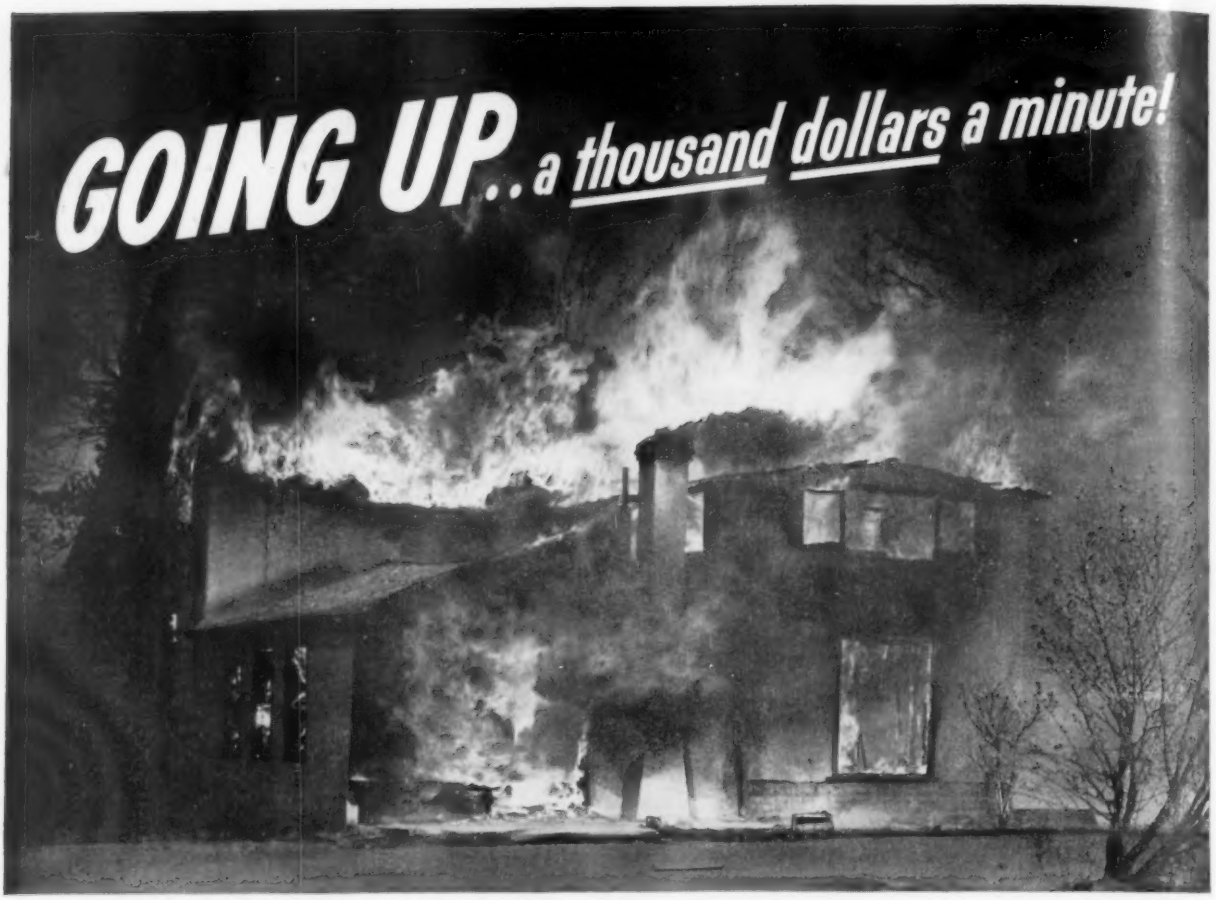
Constructed throughout of metal, the American All-Metal Slide is furnished with a roomy platform at the top of the stairs. Particular attention is called to the All-Metal Wave Chute Slide, a unique wave slide offered only by this manufacturer.

Both the wave and the straight chute types have siderails of high-carbon steel tubing 4½ inches high and 1¾ inches wide which are hot-galvanized as protection against rust. The sliding bottoms are of Armco metal, rustless metal or stainless steel, and are securely bolted and reinforced by steel battens, as shown in the accompanying photograph. Sagging of the sliding bottom and dangerous holes on the side of siderails have been eliminated. The slides are equipped with approved safety-type handrails to protect children from falling when climbing the stairs.

Foremost engineers have designed the various features of these slides. They are furnished in lengths of 16, 20, 24 and 30 feet, and are constructed in accordance with recommendations and specifications of the leading recreation authorities of the country. A catalog giving further information on this slide and also illustrating and describing other kinds of playground equipment will be sent on request by the manufacturers.



THE AMERICAN ALL-METAL SLIDE



Save precious minutes...save dollars...with this fast-working, modern fire alarm equipment.

Every fleeting minute that slips by between the discovery of a fire and the ringing of station-house alarms allows the flames to make costly headway.

New Teletype and Horni Fire Alarm equipment from Graybar shortens materially the time necessary to ring an alarm.

Municipalities will find in Graybar a convenient source . . . not only of the time-saving Teletype engine-house receiving set . . . and dependable Horni Fire Alarm equipment . . . but also *everything electrical* for every municipal need. Turn to Graybar for Western Electric Police Radio . . . good street lighting . . . efficient traffic control . . . parking meters.

Experienced Graybar specialists will be glad to help you with electrical Public Safety equipment problems. Write for information . . . or call your nearby Graybar office.

OFFICES IN 83 PRINCIPAL CITIES • EXECUTIVE OFFICES: GRAYBAR BLDG., N.Y.

PUBLIC SAFETY EQUIPMENT DISTRIBUTED BY GRAYBAR:

T. W. Moss Named Dodge Truck Sales Director

The appointment of Tom W. Moss as Director of Dodge Truck Sales to succeed J. D. Burke, resigned, has been announced by Forest H. Akers, Vice-President and Director of Sales of the Dodge Division of Chrysler Corporation, Detroit, Mich.

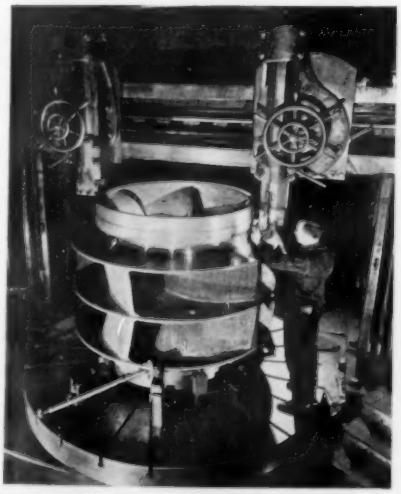
Mr. Moss, who for the past five years has been General Service Manager of the Chrysler Corporation in direction of its service activities relating to Plymouth, Dodge, De Soto and Chrysler Divisions, will assume his new duties immediately.

A New 200-Horsepower Murphy Diesel Engine

The Murphy Diesel Co., Ltd., 5317 West Burnham Street, Milwaukee, Wis., recently announced a new 200-hp diesel engine, to be known as ME-650. This engine conforms in design to that of the standard Murphy diesel Model ME. Injection is direct into a plain symmetrical combustion chamber, with injector and fuel pump combined in one unit that is easily and quickly removed and replaced. There are no high-pressure fuel lines, and injectors cannot become air bound.

Special care has been taken to assure cool operation, and pistons are oil-cooled under pressure, eliminating ring troubles and any need for special lubricating oils. Four valves are provided for each cylinder, which assures maximum breathing capacity and rapid scavenging. Should the oil pressure drop below a fixed minimum pressure, the engine automatically shuts itself off. Control is through a single lever which permits easy and simple toggling-in for remote control. The unit is equipped with a standard 24-volt starter.

The ME-650 is available either as a bare engine or with radiator and full enclosure. Skids, outboard bearings and direct-connected generator units are also available.



ONE OF THE 14,000-POUND REVOLVING ELEMENTS FOR THE FOUR RECORD SIZE SINGLE-STAGE SUCTION CENTRIFUGAL PUMPS NOW UNDER CONSTRUCTION BY THE ALLIS-CHALMERS MFG. CO., MILWAUKEE, WIS., FOR THE RACINE AVENUE PUMPING STATION OF THE CHICAGO SANITARY DISTRICT

These revolving elements, made of cast iron, are 5½ feet high and 6½ feet in diameter. Each pump will deliver 375 cubic feet of sewage per second at 138.4 rpm against a head of 19½ feet

Research Laboratories for Lancaster Iron

Beginning March 15, 1939, the Lancaster Iron Works, Inc., consolidated its engineering, research and development activities at its new research laboratories, 85 Zabriskie Street, Hackensack, N. J.

The company leased a combined office and industrial building for a period of years, and is installing a complete physical and chemical laboratory for the study and development of processes and apparatus for the treatment of industrial and municipal wastes. It will devote a portion of its laboratory facilities to routine tests of industrial wastes, sewages, sludges, plant effluents and receiving waters, and provide a test and laboratory service to engineers, municipalities and industrial institutions.

The laboratories will be under the direction of E. B. Mallory, Director of Research.

Fred J. Bradley Dies in Florida

On March 1 Fred J. Bradley, Chairman of the Board of Directors of National Meter Co., Brooklyn, N. Y., died at his winter home in Leesburg, Fla.

Mr. Bradley, aged 73, joined National Meter in 1892 as a salesman for the Midwest territory. Rapid promotions made him first Manager of the Chicago office, a member of the Board of Directors, and Vice-President, and in 1933 he was elected President and had been Chairman of the Board since 1937. He was a constant attendant at national conventions for over 30 years and had made many friends in the water-works field.

Streamlined Portable Compressors Introduced

A new line of two-stage, air-cooled portable compressors has been introduced by Ingersoll-Rand Co. in which a number of improvements have been incorporated.

These machines are available in five sizes for actual capacities of 85, 105, 160, 210 and 315 cfm of air at 100 pounds pressure. They are powered either by Waukesha heavy-duty industrial type gasoline engines or by Ingersoll-Rand type H oil engines. Probably the most striking feature is the streamlining of the complete unit. Low center of gravity, smooth lines, and an excellent finish result in a practical unit of modern appearance.

In these new units a bell housing connection is used on all sizes, making compressor and engine practically one unit. The entire assembly is mounted on a sturdy pressed steel frame. The air intake is now on top of the roof. A stronger, sectionalized radiator, having

THE NEW INGERSOLL-RAND MODEL 210A PORTABLE COMPRESSOR

improved construction of sections and more rigid mounting, is furnished. Thermostatic control replaces the adjustable curtain and automatically assures the correct cooling water temperature for the engine. A more convenient location is provided for the air receiver and fuel tank, the latter being lead-coated, easy to fill and sufficiently large to hold a day's supply. The use of two low-pressure cylinders for each high-pressure cylinder provides 25 per cent greater radiating capacity, thus insuring uniformly low operating temperatures. The new models also have patented I-R channel valves, which were introduced several years ago for stationary compressor service. Because of these valves, the manufacturer claims more efficient, quieter and cooler operation.

Complete details, including a 2-page chart for selecting the proper size of compressor to operate various air tools, are available in a new 32-page booklet, Form 3364, from the Ingersoll-Rand Co., 11 Broadway, New York.

You can't get rid of SLIMY SAM SEWER SLUDGE *with a shovel—*

You gotta have an OK Champion Sewer Cleaner to clean out your sewer mains.

The hand models will get him positively, but the power machines will do it faster. You don't want to send men down to spend all day in the sewer when it isn't necessary. You can't endanger the health of your citizens by dirty sewers when the remedy is so easy. Your expensive sewage disposal plant can't do its best work when sewers are dirty and costly damage to the plant happens regularly with dirty sewers.

Many years of rains washing down street dirt, cinders, bricks, etc., eventually fill up any sewer. Finally comes the day of flooded basements, damage suits and hurry-up, unsatisfactory, emergency, temporary cleaning.

New York City, Atlantic City, Flint, Little Rock, Bay City, Duluth, Westfield, Jersey City, Akron, Midland, Gary and hundreds of other cities keep their sewers at full efficiency by routine machine cleaning with OK Champion equipment. The cost is very low.

Why not get your copy of OK Champion literature, now ready for you?

CHAMPION CORPORATION
4716 Sheffield Ave., Hammond, Ind.

PICTURE OF A **SAFE** BOULEVARD

★ Effect

Journal Transcript Photo

★ Comment

Ornamental Lights On Hamilton Blvd. Receive First Test

The new ornamental lighting system on Hamilton blvd., the last word in street illumination, was put into effect early last night.

The 66 lights on 33 pendant type standards gave the appearance of broad daylight but there was no glare and no light cast on houses on the street.

The lights are suspended 22 feet above the street to take them well above the line of vision of motorists and in each globe are refractors which cast the light up and down the street and sidewalks but do not permit it to fall on buildings.

Four times the illumination and 10 times the visibility of old type lights on many other streets is furnished by the new ones of Hamilton blvd., it is explained.

★ Cause

GE form 79R

PEORIA'S Authorities knew what they wanted . . .

They sought adequate street illumination, safe traffic conditions, yet economically-maintained lighting . . . So after intensive investigation they installed Holophane Refractors *on the recommendation* of other successfully-lighted communities. But they did not stop there. After the installation . . .

They Justified it to the Taxpayers . . .

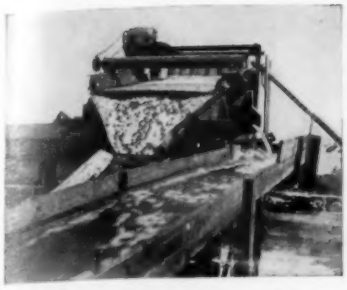
by public announcements in the press, such as the notice that appeared in the Peoria Journal-Transcript. They were anxious to let the citizens know that the new lights were providing four times the illumination and ten times the visibility.

HOLOPHANE REFRACTORS

Produce *More* Light—*Better* Light—at *Less* Cost

Find out how Holophane Refractors can help your city. A new book on Street Lighting Practice is available without charge.

HOLOPHANE COMPANY, Inc., 342 Madison Ave., New York
Toronto: 385 Yonge Street



MECHANICAL VIBRATING SCREEN FOR REMOVING SEWAGE SOLIDS

New Vibrating Screen Removes Sewage Solids

Announcement is made by Link-Belt Co., 307 North Michigan Avenue, Chicago, Ill., that in connection with the problem of preventing pollution of adjacent streams it has developed a mechanical vibrating screen for the efficient removal of solids from factory waste water.

The screen, having a screening surface of 2 x 4 feet or 4 x 5 feet, and employing fine-mesh stainless steel screen cloth, has already been thoroughly tried out at several vegetable and citrus fruit canning plants and at a steel mill for the removal of slag that was light enough to float out into a stream adjoining the mill's quench pit. At one tomato canning plant where the handling capacity is 300 gallons of waste water per minute, the solids were discharged over the front edge of the screen into a barrel at the rate of about one barrel every 25 minutes. The solids were then used as fertilizer.

The vibrating screen is a compact, self-contained unit, furnished complete with steel collecting tank under the screen cloth. The motor is of 1 or 2 hp, depending upon the size of the screen, and is mounted on top of the screen's steel framework. It is stated that no spray water is required for washing the particles from the screen cloth, the mechanical vibratory action of the screen itself removing them; that the first cost of the installation is low; and that the screen cloth, of minimum size for the work performed, is easily replaced when necessary.

Manufacturers' Division Officers Elected

William M. Parrish, Industrial Sales Executive of International Harvester Co., Chicago, Ill., was re-elected President of the Manufacturers' Division of the American Road Builders' Association when that organization held its 36th annual convention and "Highways of Tomorrow" exhibit in San Francisco's Civic Auditorium March 7-10.

Newly elected directors of this division of the national road association are John Connors, Vice-President of Galion Iron Works; Carl Wagner, Vice-President of Bucyrus-Erie Co.; George Schlesinger, Executive-Manager, National Paving Brick Association; John Keplinger, President, Hercules Motors Corporation; Howard Hall, President, Iowa Manufacturing Co.; B. C. Heacock, President of Caterpillar Tractor Co.; Joseph Heil, President, The Heil Co.; George Dimond, Sales Manager, Koehring Co.; and R. W. Cornelison, Vice-President, Northwest Engineering Co.

Continuing directors are Paul L. Griffiths, Vice-President, Koppers Products Co.; C. H. Lehman, Secretary and General Sales Manager, Blaw-Knox Co.; C. D. Macpherson, Hoist & Body Division, Gar Wood Industries, Inc.; W. E. Miles, Sales Manager, Cleveland Tractor Co.; William M. Parrish, Industrial Sales Executive, International Harvester Co.; Chauncey B. Smythe, Vice-President, The Thew Shovel Co.; J. M. Bauman, Vice-President, White Motor Co.; Edgar J. Buttenheim, Publisher, THE AMERICAN CITY; J. F. Cast, Manufacturers Sales Manager, Firestone Tire & Rubber Co.; L. E. Dauer, The Trackson Co.; and B. F. Devine, Sales Manager, Construction Equipment Division, Chain Belt Co. Other re-elected officers are H. N. Schramm, President, Schramm, Inc., and George F. Schlesinger, Executive-Manager of the National Paving Brick Association.

Indian Motocycle Makes Tire-Marking Rod

A new marking rod for the use of foot patrolmen and motorcycle officers in marking automobile tires in restricted parking areas is now made by Indian Motocycle Co., Springfield, Mass.

The rod is made of light-weight, highly polished aluminum tubing with a rubber hand grip and metal adjustment clamp to hold the crayon in position. Regular white tire-marking chalk is supplied with each rod, but six different colors are available. The rod is 24 inches in length.

New Manual on Water Analysis

Men engaged in analytical work or water conditioning in their plants will find a wealth of valuable information in the new, enlarged, fourth edition of the Water Analysis Manual, recently published by the Betz Laboratories.

This handbook contains complete, up-to-the-minute facts on water analysis by outstanding authorities. It tells how to obtain representative samples and follows through with correct procedure and calculation of results for each test. Chemicals required are also enumerated and apparatus is illustrated. In addition to various standard tests, several new methods of analyses are described, including the THQ and Betz-Hellige methods for sulfate determination.

The Betz Water Analysis Manual has been adopted by many concerns as a standard reference book. Enlarged, well illustrated, containing 20 pages and over 10,000 words, this new edition will be mailed without cost or obligation if request is made on your company letterhead to W. H. & L. D. Betz, chemical engineers and consultants on all water problems, 235 West Wyoming Avenue, Philadelphia, Pa.

South Bend

31 YEARS EXPERIENCE

STREET FLUSHERS

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STREET SPRINKLERS

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For Bituminous Surfaces

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MUNICIPAL SUPPLY COMPANY
SOUTH BEND, IND.

MEMPHIS POLICE RECOVER 98% OF STOLEN PROPERTY

Thief at large 3 minutes

Just after dawn on May 20, 1938, a young man smashed the window of a jewelry store on Main St. in Memphis—scooped up a handful of diamond rings and disappeared around the corner.

The broken window set off an alarm at the A.D.T. central station—was relayed to Police Headquarters—broadcast over the Western Electric Police Radio. Three minutes later radio police captured the thief. The $700 loot was recovered.

80% with direct aid of Western Electric Radio...

Speed, immediately after a crime is committed, is vital. Memphis, Tenn., has proved that again. Since July 20, 1931, when the 1-way Western Electric Police Radio was installed to cover the 56 square miles of Memphis, the police have responded to alarms in an average of 3 minutes—*25 minutes faster than before.* 98% of stolen property is recovered—80% with the direct aid of Police Radio.

The Memphis radio equipment contacts 13 squad cars and 13 detective cruisers . . . also 25 pieces of fire apparatus. Then too, it serves the 745 square miles of Shelby County and the city of West Memphis, Arkansas.

Whether you have a village, city, county, or state to cover, Western Electric has the correct Police Radio equipment to help you do it better . . . make it safer. For details on equipment to meet your needs, write Graybar Electric Co., Graybar Building, New York City.

Distributed by GraybaR

Western Electric Police Radio is giving added protection to 45,000,000 people.

Western Electric

Distributed by GRAYBAR *Electric Co.* *In Canada: Northern Electric Co., Ltd.*

POLICE RADIO TELEPHONE EQUIPMENT

Improvements in Turco Sewer Flusher

The Turco sewer flusher, a best-selling tool in the line of sewer-cleaning equipment manufactured by the Turbine Sewer Machine Co., 5210 West State Street, Milwaukee, Wis., has recently added some improvements to the regular model.

THE IMPROVED TURCO SEWER FLUSHER

These flushers were originally marketed with standard canvas plies, and users encountered a great deal of trouble with mildew. The improved Turco now has a very strong outer ply of rubberized duck which covers multiple plies of stronger canvas, together with a better inner tube. The canvas plies have four rows of the strongest stitching to greatly strengthen the bag, a type of sewing which required a specially-built heavy-duty commercial-type sewing machine.

Another addition is the special hydraulic banding machine which applies stronger bands with 2,000 pounds pressure. And in spite of this flushing bag's great popularity, new production heights have enabled the manufacturer to pass on a savings in cost beside a longer-wearing guarantee. A catalog has been prepared on the flusher, and copies will be forwarded gratis to readers of THE AMERICAN CITY.

Asphalt Industry Strikes Note of Optimism

In accepting his re-election as President of The Asphalt Institute for the year beginning April 1, 1939, Joseph S. Helm, of the Standard Oil Co. of New Jersey, called attention to the striking fact that the asphalt industry had proved itself practically depression-proof. He stated that 1938 registered a gain of 63 per cent in asphalt for highways over 1928, and that the entire output of the industry was 44 per cent higher, due largely to the highway program.

Vice-Presidents elected were: J. A. Blood of Standard Oil Co. of California, T. M. Martin, of Lion Oil Refining Co., and A. M. Maxwell of Standard Oil Co. of Ohio. W. H. Kershaw of The Texas Company was elected Chairman of the Executive Committee, with Messrs. Blood, Helm, Martin and David Waxman of the Shell Petroleum Corporation as members; and F. V. Widger of The Texas Company was re-elected Secretary. J. E. Pennybacker was re-elected Managing Director, with offices at the headquarters of The Asphalt Institute, 801 Second Avenue, New York.

More fully to maintain contact with engineering and research developments at Washington, particularly in the field of highways, airports and flood control, the Institute has established a district engineering office in the Transportation Building, Washington, D. C. Major Walter R. Macatee, District Engineer at Cincinnati, has been promoted to the same post at Washington.

The purpose of the new office is to bring to the scientific departments of the Government the full cooperation of the asphalt industry in working out the problems of bituminous construction, since in both highway and airport development the bituminous types predominate. Developments in the use of bituminous mats and jetties for flood control and harbor protection will also have Major Macatee's attention.

Parker Made Officer of Pittsburgh Meter

Walter H. Parker, who has been Manager of the Liquid Meter Division of Pittsburgh Equitable Meter Co., Pittsburgh, Pa., for a number of years, has been elected Vice-President of the company. In this capacity he will have charge of all manufacturing operations in the two Pittsburgh plants, as well as the factory in Hopewell, N. J. Previous to becoming associated with the Pittsburgh Equitable Meter in 1929 Mr. Parker served as Chief Engineer for the Fry Equipment Co., of Rochester, Pa.

Death of Barrett Co. Engineer at Washington

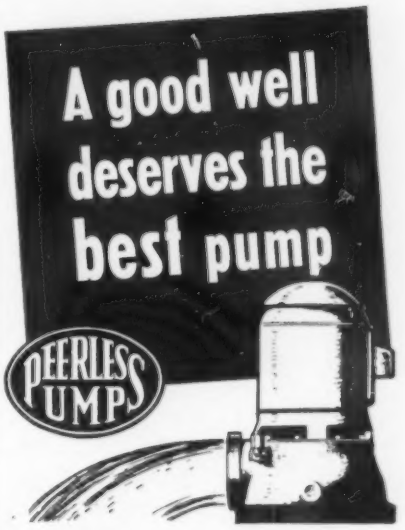
C. H. Olmstead, Consulting Engineer, General Tarvia Department, The Barrett Co., Washington, D. C., died at the Emergency Hospital, Washington, D. C., on February 1, 1939.

In connection with his work, he was in very close touch with highway construction in the southern part of the country and published numerous articles describing highway work. Mr. Olmstead joined The Barrett Co. in 1928.

Pole Reflector Buttons Prevent Smashes

There are a great many roads, particularly in county highway systems, which need to be made visible, or at least identified, to the night motorist. Several utilities companies have made use of Peerless crystal reflector buttons for this purpose along turnpikes where no highway lighting has been installed.

The cost of these installations is comparatively small, 6½ cents each installed on the wooden poles, and they return real dividends to the community in reducing the number of automobile accidents and their accompanying loss of life. The reflector buttons are very easily installed; a No. 17 bit is used to drill a 1-inch hole in the pole for the installation of the No. 1-A button, or a No. 14 bit to drill a ⅝-inch-deep hole for the No. 2-A button, which is slightly smaller. Peerless Manufacturing Corporation, Louisville, Ky., will be glad to send a copy of its Bulletin 35 describing these installations and giving prices.



Why it pays to buy a Peerless

BECAUSE Peerless is one of the world's largest manufacturers of deep well turbine pumps.

BECAUSE Peerless laboratories have developed many exclusive improvements in design that result in high maintained efficiency and a trouble-free pump which is making sensational performance records.

BECAUSE Peerless uses the finest materials and precision manufacturing methods to give you a pump that will last many years longer than the average. For just a little difference in price, you can equip your well with a Peerless, the pump that has met the most exacting demands for over thirty years.

Factories:
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FRESNO, CALIF. • MASSILLON, OHIO

★ WATER OR OIL LUBRICATION
Peerless
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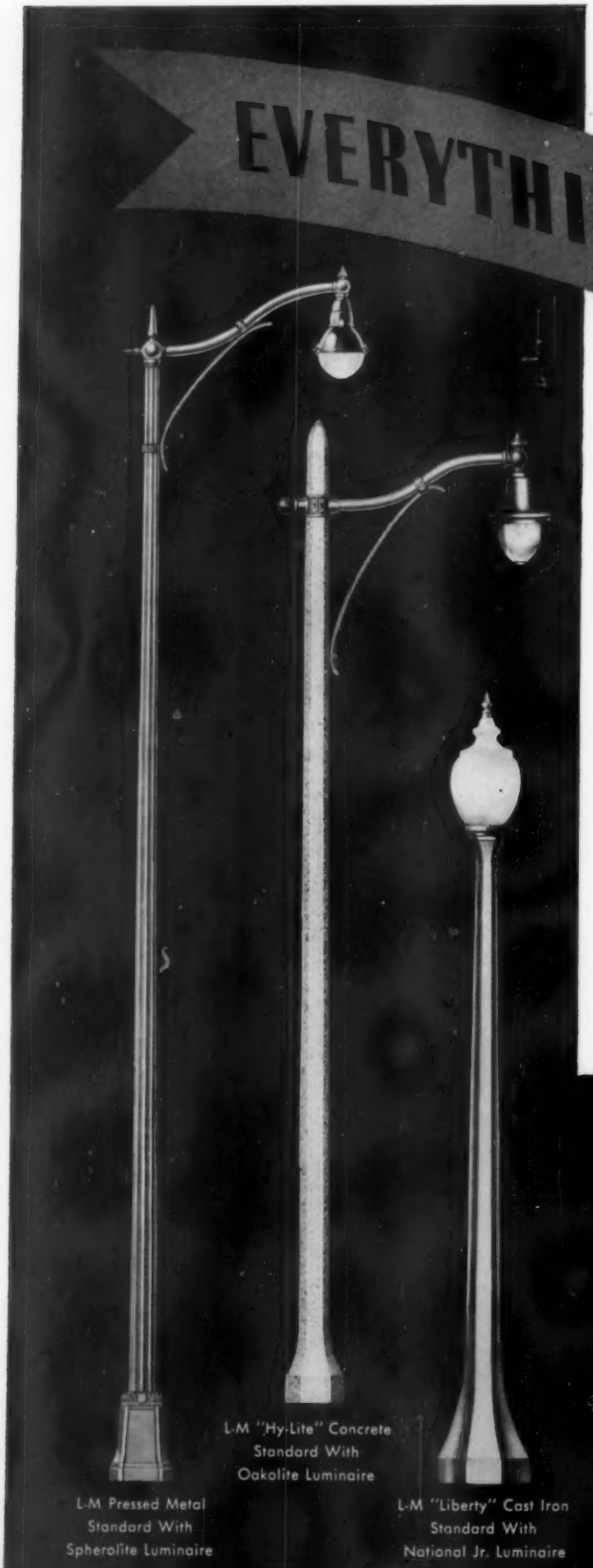
FOOD MACHINERY CORPORATION
PERFORMANCE WITH ECONOMY

EVERYTHING YOU NEED

in Street Lighting Equipment

Complete White Way, or just a few replacement parts . . . your L-M representative stands ready to give you his fullest cooperation. In the complete L-M Street and Highway Lighting line you will find the *right* equipment for your job . . . in efficiency, good appearance, and low maintenance cost.


L-M Pressed Metal Standard With Spherolite Luminaire
L-M "Hy-Lite" Concrete Standard With Oakolite Luminaire
L-M "Liberty" Cast Iron Standard With National Jr. Luminaire

LINE MATERIAL CO.

Link-Belt Book on Sludge Collectors

A new 16-page illustrated catalog, No. 1742, has been published by Link-Belt Company, on its Straightline Collector for the efficient, continuous removal of sludge from rectangular tanks at sewage-treatment and water-purification plants. Copies of this new book, containing layout drawings, installation pictures and capacity tables, may be had by addressing Link-Belt Company, 2045 West Hunting Park Avenue, Philadelphia, Pa.

Four Modern Methods of Sewer Jointing

The job of jointing sewer pipe has been done for many years, but not always has it been well done. Now, in order to help achieve such perfection as long-lived, water-tight, flexible, root-proof and acid-resistant sewer-pipe joints, Servicised Products Corporation, 6051 West 65th Street, Chicago, Ill., has printed a descriptive booklet on the Servicised Asphalt Sewer Jointing Materials.

Fully described are the Servicised premolded sewer-pipe belts, a mixture of fiber asbestos and refined bitumens which is formed to the exact size for the various pipe dimensions and calked into the angular space between the bell and spigot. Servitite is a plastic cold troweling compound furnished in two units for mixing on the job as required. These units consist of the powdered and the liquid asphalt, making a compound which is highly adhesive to either clay or concrete pipes. Tufflex also is a cold plastic troweling compound which is premixed at the factory and ready for instant use on the job.

Servicised Hot Pouring Compound is compounded to meet all sorts of conditions over a period of time. This Hot Pouring Compound is also furnished with dies, at which time it is known as 2 in 1 Die Cast Joint Compound.

Q-D Asphalt Primer is another product for use in conjunction with any of the sewer compounds. Its use assures absolute adhesion to the pipe under wet trench or other adverse conditions.

The booklet is liberally illustrated with photographs of Servicised products and their application and includes handy order tables and a price list of pipe joints. Readers of THE AMERICAN CITY may obtain copies by writing direct to the manufacturer.

American Council of Commercial Laboratories

An illustrated brochure, "Independent Laboratory Services," has been issued by the American Council of Commercial Laboratories to acquaint industry and municipalities with the services available covering the utilization of specialized equipment and specialized knowledge, skill and experience in the determination of properties and characteristics of materials or the performance and values of devices and products. Copies of this brochure may be secured by writing to D. E. Douty, Secretary, American Council of Commercial Laboratories, 1415 Park Avenue, Hoboken, N. J.

The officers of this organization are Preston S. Millar, President, East End Avenue at 79th Street, New York; Vice-President, M. L. Patzig, 2215 Ingersoll Avenue, Des Moines, Iowa; Secretary, D. E. Douty; Treasurer, A. R. Ellis, Stevenson and Locust Streets, Pittsburgh, Pa. The Executive Committee consists of James H. Herron, Cleveland, Ohio; F. B. Porter, Fort Worth, Texas; and T. A. Wright, New York City.

L. P. Madden Falls from Hotel Window

Overcome by smoke from a fire in his room, L. P. Madden, familiarly known to the water-works industry as "Joe" Madden, fell four stories to his death recently when raising a window to let air into his hotel room at Charleston, W. Va. The coroner listed the death as accidental.

Mr. Madden was Sales Representative and District Manager for The Ludlow Valve Mfg. Co., at Pittsburgh, Pa. He had been connected with the company for 25 years.

Threshold Treatment of Softened Waters

A so-called "threshold treatment" which prevents the precipitation of calcium carbonates from a softened water has been developed by Calgon, Inc., 300 Ross Street, Pittsburgh, Pa. Numerous papers on this subject have been published in various industrial magazines and have been reprinted for the benefit of water-works officials and operators who are interested in a closer control and may be secured free by writing to Calgon, Inc.

APPLYING SERVITITE TO A SEWER PIPE JOINT TO PREVENT

● Porcelain enameled street signs are the ultimate in both durability and economy. That is because porcelain enamel is mineral through and through. And a mineral which has been smelted at temperatures that make it glass hard. More than that, this glass-hard porcelain enamel is fired at 1550°F. until it is fused, or welded, right onto its supporting metal. There is no finish for signs known to man that is so hard, so endlessly bright, so fadeless, so efficient as porcelain enamel.

● Send today for this beautifully illustrated book. It tells what porcelain enamel is—how it is made—why it is the lifetime, trouble-free finish for street and park signs. Sign and return the coupon, now.

Porcelain Enamel Institute, Inc.
612 North Michigan Ave., Chicago
Send me, free of cost or obligation, a copy of your 24-page book "Porcelain Enameled Signs."

Name.....

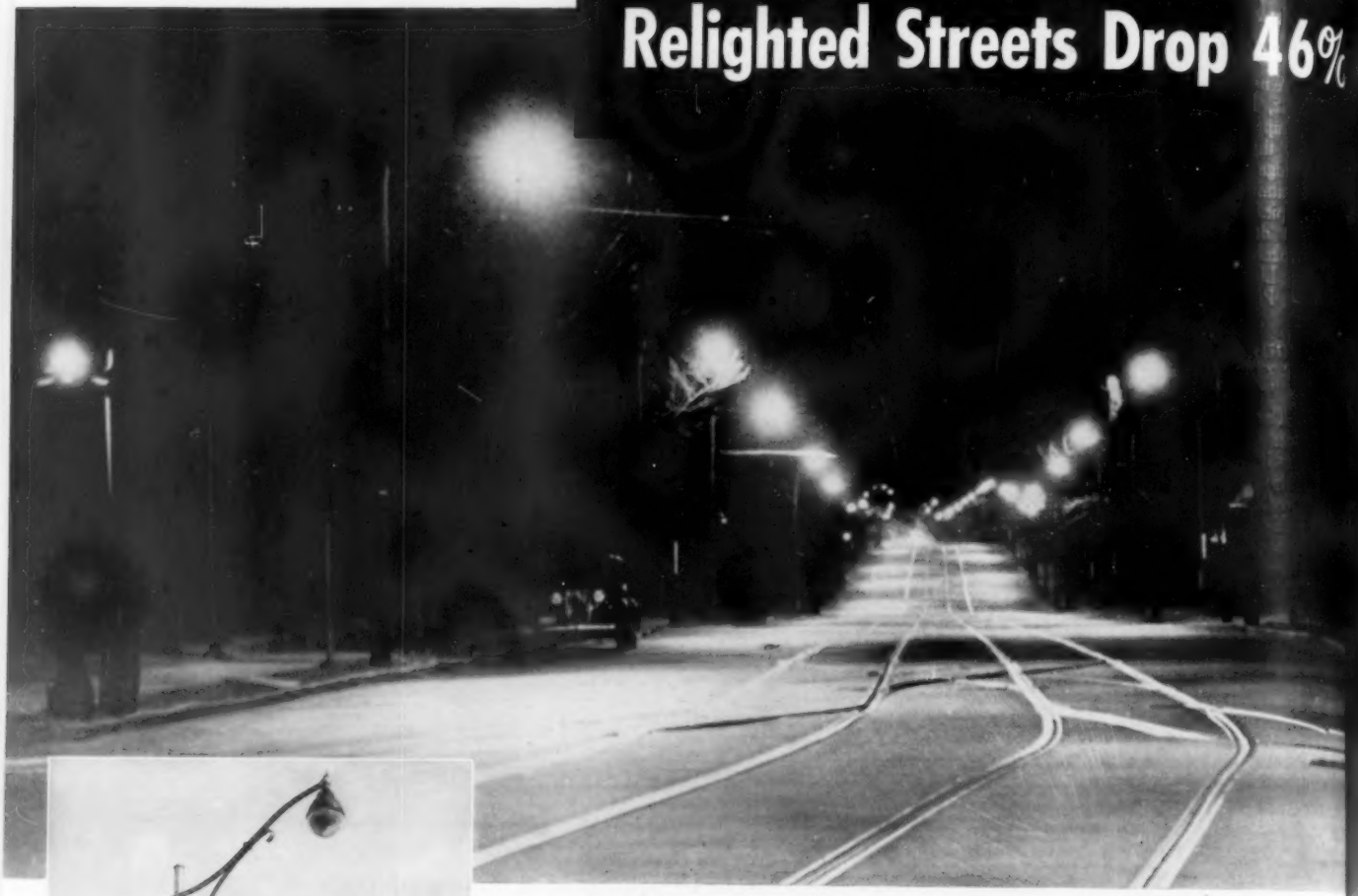
Position.....

Address.....

City *State*

Night Accidents on Hartford's Relighted Streets Drop 46%

Farmington Ave., in Hartford, Conn., is safer for night driving since the installation of G-E Form 79R incandescent luminaires



The fixture being used most frequently in street-lighting modernization is the General Electric Form 79R luminaire. More than 50,000 units have been installed throughout the country. Tests have proved the Form 79's ability to put 40 to 50 per cent more light on the road than old-type fixtures—and without throwing objectionable glare into the eyes of motorists.

HARTFORD knows what modern street lighting can do. On 10 miles of streets in that important Eastern city, night accidents dropped 46 per cent in one year after G-E Form 79R luminaires were installed. Careful checking of property-damage and personal-injury costs (not including *fatalities*) showed that the money Hartford citizens saved in one year by the installation of these lights was more than the entire street-lighting bill. The results have been so satisfactory that the city is now relighting 12.5 more miles of streets.

Hartford's experience is not unusual. Cities from coast to coast have reported substantial accident reductions on relighted streets. Has your city looked into the opportunities for saving lives and money by relighting main thoroughfares? Remember that although traffic at night is only ***one third*** as heavy as by day, ***60 per cent*** of the nation's traffic deaths ***occur after dark.***

General Electric lighting specialists have studied the traffic problems of scores of cities and have helped municipal officials set up effective, economical lighting-modernization programs. One of our specialists will be glad to make a study of your city. Just contact the nearest G-E sales office or write to General Electric, Schenectady, New York.

GENERAL ELECTRIC

500-345

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks and the Floodlighting of Public Buildings

New Applications of Outdoor Lighting at the World's Fair

Some Practical Uses of the New Colored Lighting Technique

By HARRY M. HAYS
Lighting Engineer, Westinghouse Electric & Mfg. Company

THE American public is being treated this summer to the greatest lighting spectacle it has ever seen, at the New York World's Fair 1939. Application of color to outdoor night lighting has provided the illuminating engineer with enormously enlarged opportunities in treatment of buildings, landscapes and water. We have some new tools which we did not possess in 1938. They have made it possible to bring to reality the conceptions of lighting grandeur of such men as Bassett Jones and R. C. Engelken, lighting consultants to the Fair.

Outstanding is the small capillary mercury arc lamp, used to produce a striking blue light on the Perisphere. The Fair marks the first commercial use of this lamp. But the 1939 Fair, like its predecessors, will stimulate widespread use of lighting methods. This and other decorative mass lighting effects, such as the Canopy of Light spread by searchlights above the Court of Peace, are adaptable to many municipal and other public lighting projects. The new soft golden color achieved in lighting the twin towers of the Federal Building suggests itself for illumination of spires, towers and campaniles in other locations.

Tree lighting for parkways and public squares, produced by small floodlight units masked by shrubbery, can provide as beautiful an effect elsewhere as it does, for instance, on Constitution Mall and at the Plaza of the Ford Building at the Fair. It points an alluring finger toward suburban and public park illumination of the near future.

Another interesting use of floodlighting is on the exterior murals on the Food Building and other Fair buildings. While the popularity of the exterior mural in this country is fairly recent, its vogue is decidedly on the increase, and floodlighting broadens the attractiveness of its application to public buildings.

AUTHOR HAS A 1,000-WATT NEW TYPE LAMP IN HIS LEFT HAND, AND IN HIS RIGHT A RECEPTACLE THAT CIRCULATES ONE GALLON OF WATER TO KEEP THE LAMP COOL.

Both standard incandescent and the new fluorescent lamps are used in many interesting ways at the Fair for ornamental street luminaires. They provide vertical, cluster and lantern effects. Popularity of the fluorescent lamp is due to its high efficiency and low wattage, as well as the unusual color combinations which it makes possible.

Economy of operation is, in fact, an important practical aspect of all the new exterior lighting projects. Equipment, relatively inexpensive, is now ready for production on a commercial basis. The utilitarian street lighting of the Fair demonstrates that even here beauty of fixtures is strictly in keeping with practical use of light.

Fluorescent lighting of building façades provides still another new field for the use of light and color. The Fair presents this technique for the first time anywhere.

The showpiece of the Fair is the fountain at the Lagoon of Nations, conceded to be the greatest combined water and lighting spectacle ever witnessed by man. Here jets shoot 20 tons of water in the air at a time, some jets rising to a height of 160 feet. A new fixture, set almost entirely below the water line, contains a 400-watt capillary mercury arc lamp and a 1,500-watt incandescent lamp. Over the lamps a hexagonal color wheel rotates. As each of the 585 units is independently controlled, an endless variety of pastel color effects is made possible. Water, light and color are synchronized with symphonic music played through a public address system.

Possibilities of fountain and waterscape lighting are only beginning their development. The near future is likely to see widespread adaptation of this technique in American cities.

Because of its dramatic presentation of lighting effects, the Fair is expected to make a profound impression on the American public of the decorative possibilities which colored exterior illumination offers for every community.

The Fair is far more than a novelty or a carnival. It gives a demonstration of what American industry is capable of performing in illumination projects.

MAKING "MAIN STREET" (and all thoroughfares) SAFER AFTER DARK

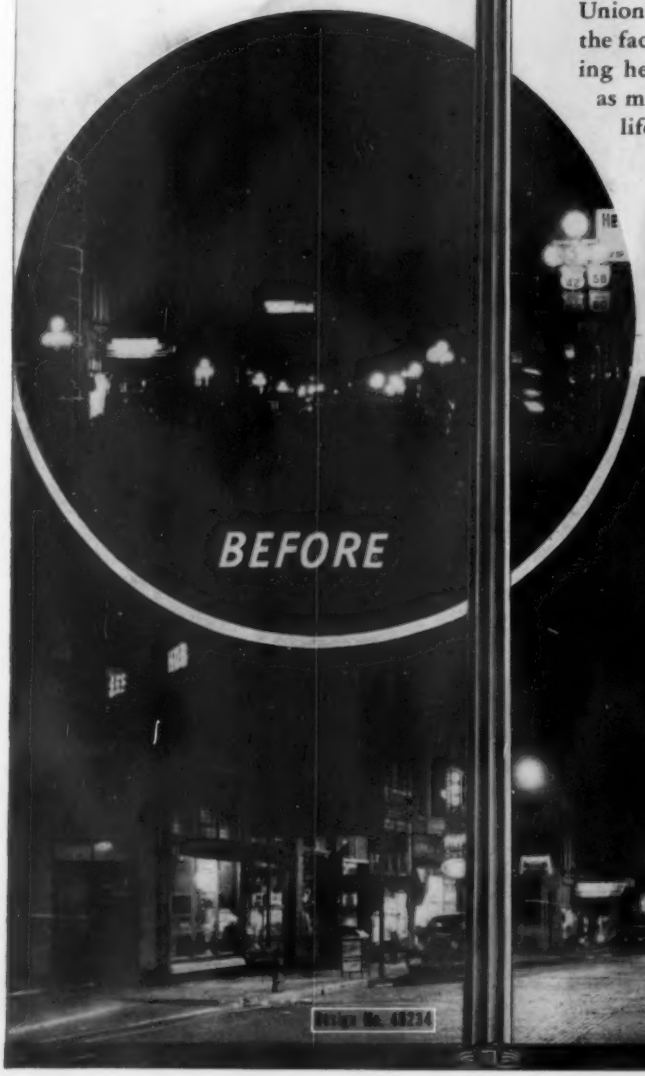
Ashland, Ohio, modernizes street lighting system to boost safety and business

● Are people aware of the advantages of modern street lighting? Certainly they must be when 5000 of Ashland's citizens attend a celebration at which the main attraction was turning on the city's new business street-lighting system.

In Ashland, as in scores of other progressive communities, modern street lighting includes the use of Union Metal steel standards. This acceptance is based on the fact that these standards offer the increased mounting heights prescribed for scientific lighting, as well as many exclusive design features that make for long life, low maintenance, and attractive appearance.

Plan now to give your citizens greater safety through street lighting modernization. Union Metal engineering services are available without obligation.

THE UNION METAL MANUFACTURING CO.
CANTON, OHIO



MAIN STREET OF FRANKLIN, PA., CLEARLY, EVENLY LIGHTED

Good Visibility

HEAVY as is the night traffic on Route 6 Pittsburgh to Erie and Route 322 Lakes to Sea, on the half-mile through Franklin, Pa., driving is less hazardous because of the new street-lighting system on both thoroughfares. A substantial reduction in electric rates by the Keystone Public Service Co. made this possible.

On the main street, 75 feet wide, the installation consists of 26 Line Material Co. Oakalite luminaires with Holophane refractors fitted with 10,000-lumen lamps mounted 2 feet high and spaced 130 feet apart in staggered arrangement. Four units at each principal intersection give adequate visibility where most vital.

On a 40-foot secondary street there are 61 4,000-lumen lamps, spaced 90 feet apart, staggered, at a height of 16 feet.

JOHN McK. SNOW,
City Engineer, Franklin, Pa.

Better Light, Less Power

THE old 5-light clusters of Manhattan, Kans., 11,000 population, 30 miles west of Topeka and 60 miles west of Kansas City, have been replaced on eight city blocks and the side streets, by modern luminaires mounted 5 feet higher than were the old units. On the main street, the lamps are of 500 watts and on the side streets of 300 watts, in medium alabaster ripple-glass globes. The higher mounting has greatly improved the illumination, and the entire installation consumes less power than the old.

E. C. PFUETZE,
Utilities Commissioner, Manhattan, Kans.

Night into Day at the New York World's Fair

See Article on Page 129

THE TRYLON AND THE PERISPHERE IN THE DISTANCE, WITH THE TREES MADE BRILLIANT BY CAPILLARY MERCURY TUBES HIDDEN IN THE GROUND

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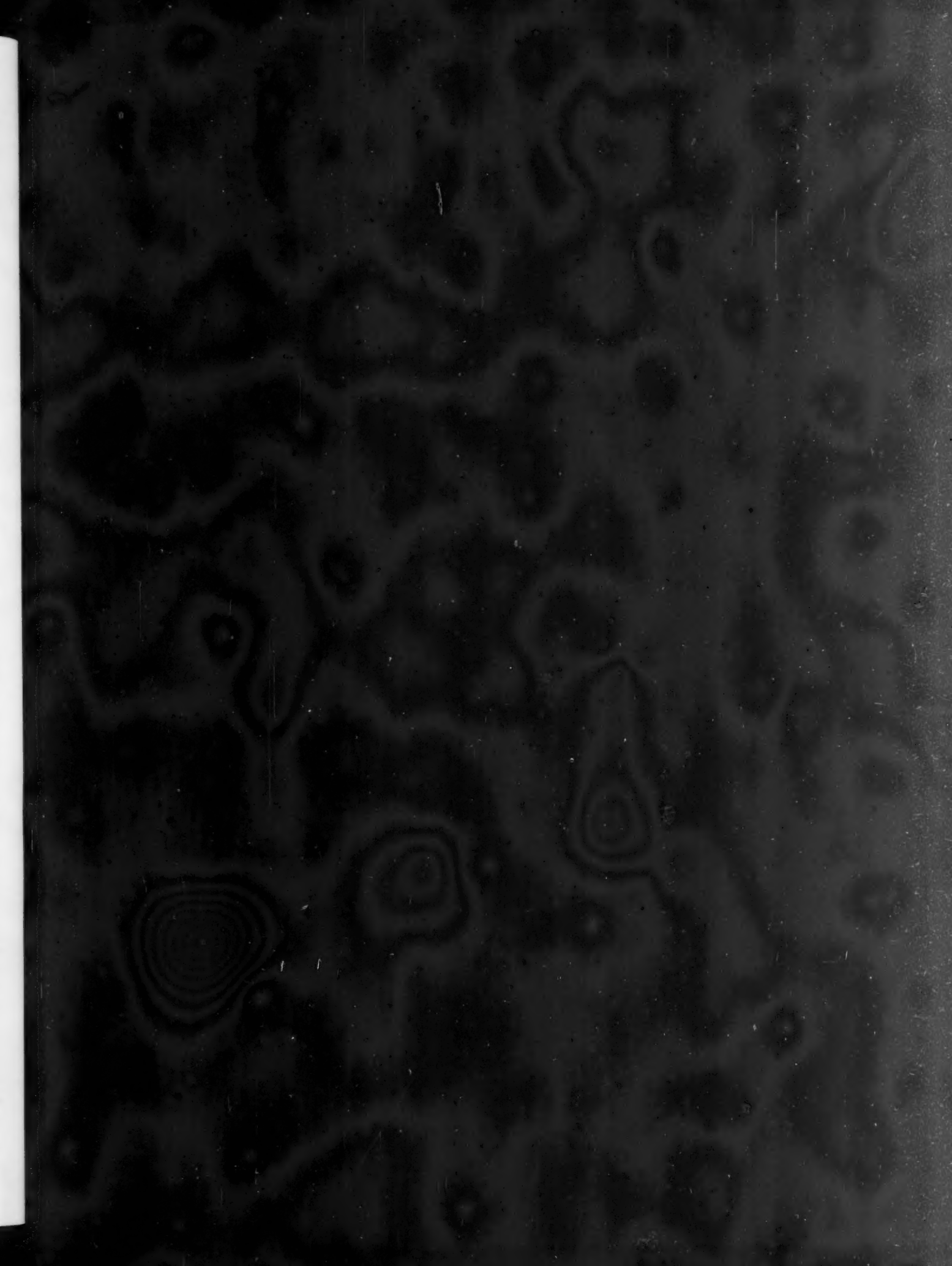

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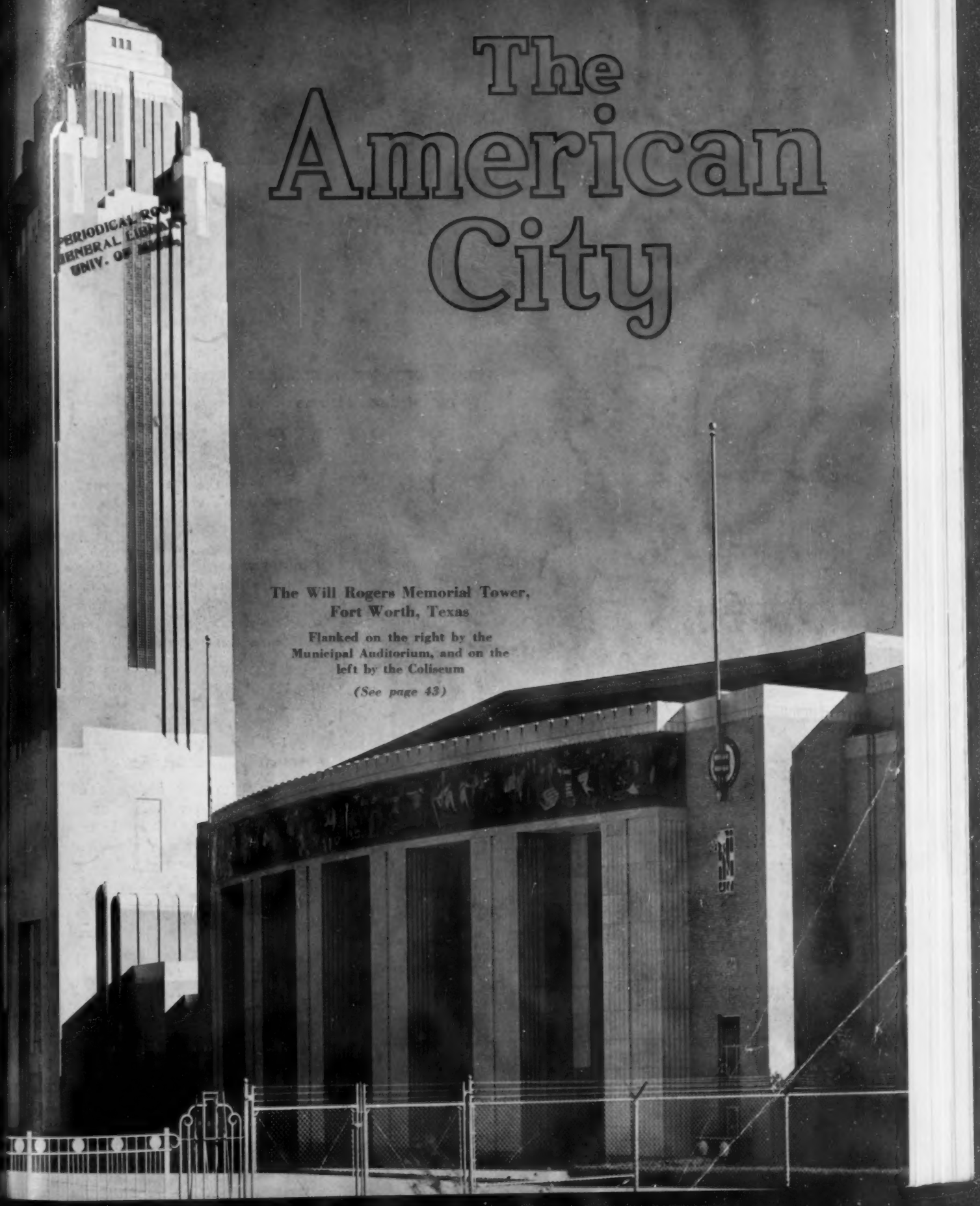

The Will Rogers Memorial Tower, Fort Worth, Texas

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(See page 43)